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## Acorn's future in the balance

Acorn has been hit by a new financial crisis resulting in the suspension of many of its projects and the loss of its main customer.

The maker of the BBC micro is now involved in discussions with its major shareholder Glynis to determine if the Italian electronics giant will merge Acorn's second time.

Just four months ago, Glynis helped the Acorn with £200m to secure for 48.3% of the shares.

As HCW went to press, Acorn's shareholders were divided on whether Glynis will inject the £200m that is required to be necessary to keep Acorn afloat. It is believed that Acorn owes its suppliers over £10m.

An official statement from Acorn's executive chairman, Clive Burrell, said: "Acorn has been widely reported to be in the market for finance and several potential companies have become aware of this and a further enquiry followed. The fact has emerged under sales from the banks generally criticised earlier in the year. This has led to a significant deterioration in the financial position of Acorn since the time of the right case."

Clive Burrell, added the statement, is directing "new proposals relating to the future financing of the Group."

Acorn and its financial advisers decided to convene on the present situation and discussions with Glynis and Glynis have reached an agreement.

The latest financial update of Acorn is covering a state of uncertainty among its dealers. "I wish they would make a decision one way or another," said the financial managing director of ASHTA.

"We are not sure what, and then another and at the moment we are left hanging in the air."

He thought was optimistic that Acorn would survive. "We are selling 1000 BBCs a month and

about 150 BBC B+ and that's double the quantity compared with six months ago. I have to think that Acorn will come through one of it as a smaller concern."

According to one dealer the cause of Acorn's problems may not be solely due to falling sales. "The trouble with Acorn is that the people making the decisions don't understand the market and the people advising them have no experience of business."

In an attempt to raise cash, Acorn is believed to be in the range of selling off its subsidiary Acornsoft. British Telecom is reported to have already filed a lawsuit with Acorn to dispute a possible takeover bid for Acornsoft.

As revealed in last week's HCW, Acorn has already announced a price cut in the BBC B+ - an effort to boost sales.



Acorn's chairman - Clive Burrell



Little Acorn - mighty task!

**More Spectrum  
machine  
only p.26**

**Expand your  
BBC  
printer ROMs  
reviewed p.34**

**Musical HCW  
Music and the  
Micro p.30...**

**...Make music  
on your C64  
keyboard p.31...**

**...Catch  
musical mice  
on your  
Amstrad p.28**

# Spectrum + DCP

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## DCP

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# HOME COMPUTING WEEKLY



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July 7-July 13, 1985 No. 130

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### Soapbox

The Soapbox published in HCW 107-114, the rest on the back.

The use of home computers as personal purchases has been under development for not almost. Home computers as teaching aids is an area that has been widely neglected to date.

The recorded educational software certainly has its role, but this positive form of teaching is not enough. There is a within the realm of possibility, especially with a video release, toward the correct, that local TV stations could transmit educational programs, offering a more active and immediate response to it from within the home or from schools and colleges.

Children can interact with computers and educationalists should take advantage of this. It is better to look at a TV monitor and have some control over its focus than to look at a blackboard from the back of the classroom.

Thomas Levine, Bedford

If you wish to get on the Soapbox send us a letter and we will do our best to print your views. We reserve the right to edit those whose letters are printed.

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### BASIC LIVING

GETTING THE MOST A HOME.



HE SAYS: "IT'S A HOME, BUT IT'S A HOME WITH A COMPUTER."



Jim Barker/Jon Wedge



# SILVER RANGE... Seeing



**THE HELM** Adventure  
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**DUCK?** Arcade  
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Addictive and challenging multi-level arcade action



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Trapped on the sea, feedin' a suspicious submarine



**YOUNG RAIDERS** War Game  
A test of strategy against the computer or friends



**RUN RUBY RUN** Arcade  
Multi-car cop chase and shoot-out



**ZULU** Arcade  
Too glibly slaps bullets in a magic maze



**DON'T PANIC** Arcade/Strategy  
Amazing and challenging: a game with a difference



**DON'T LIST THIS!** Compilation  
Five of the worst games you have ever seen



**THE HACKER** Arcade/Strategy  
To mess (to modems, tele phone network to mainframe

# is believing

# £2.50 each.



**PANZERBOLT 3600** Arcade/Strategy  
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**HEADACHE** Arcade  
Nervous Ned is bent to serve the Drin



**MICKY THE BRICK** Arcade  
Four screens packed with fun



**BOOTY** Arcade/Adventure  
Twenty blocks full of pirate loot



**SHORT'S FUSE** Arcade/Strategy  
Sam Short's cool agent ronks Boris and his bombs



**GOGO THE GHOST** Arcade/Adventure  
150 different haunted castle chambers



**BIRD STRIKE** Arcade  
Wing the planes and shoot the pigeons



**CIRCUS CIRCUS** Arcade  
Twenty circus rings to escape



**THE WILD BUNCH** Arcade/Adventure  
Accused of murder Hunt the real killer

## FIREBIRD SILVER CATALOGUE

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001 MS. FRECK  
002 THE WILD BUNCH  
040 SHORT'S FUSE  
041 SUGAR

**BBC MODEL B**  
000 BIRD STRIKE  
000 DUCK  
002 EXTRA  
003 THE HACKER  
004 MS. FRECK  
005 MICROBOMB

**ELECTRON**  
007 BIRD STRIKE  
008 THE HACKER

**COMMODORE 64**  
001 MS. FRECK  
002 BOOTY  
040 SUGAR  
000 HEADACHE  
000 TALK  
001 GOGO  
002 EXTRA  
003 SUGAR  
004 THE HELM  
005 CHICKEN CHASE  
041 CIRCUS CIRCUS

**MSX 201/2/3/4/5/6/7/8/9/10**  
003 MICKY THE BRICK

**SPECTRUM 128/640**  
000 RUN BARRY RUN  
000 DON'T PANIC

**SPECTRUM 486**  
000 YIPPO HANGERS  
010 THE WILD BUNCH  
010 MS. FRECK  
010 BOOTY  
001 SUGAR  
000 THE HELM  
000 SHORT'S FUSE  
007 HELICOPTER  
040 DON'T BUY THIS!  
040 PANZERBOLT 3600

## MAIL ORDER

Please state name of game (and machine) and numbers required.  
Enclose crossed cheque/PO made payable to FIREBIRD SOFTWARE.  
All offers are subject to availability. Orders are despatched promptly.  
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WELLINGTON HOUSE,  
UPPER ST MARTIN'S LANE,  
LONDON WC2H 9ER



### One year old

Kosmos, a software company primarily known for its MSX, Atari and arcade machines, has just celebrated its first year of trading in the UK.

The company is now committed to supporting the MSX range of computers. The volume operation of the company commenced in November 1984 although Kosmos is still probably best known for arcade games like *Survival*.

A major agreement has recently been concluded between Kosmos and Games to produce a number of titles under the Imagine label for the Spectrum, Commodore, Amstrad and BBC computers.

Kosmos, Television House, 269 Field End Rd, Barking, Midd. M44 6LJ



Kosmos's bosses, underline their firm identity

### Power cleaner

Like many other users Tony Parkinson has been plagued by interference from dirty power supplies.

His solution to this annoying problem is a new electronic complex with all the necessary components. The inclusion of a filter, inductive elements and suppressor proves a successful remedy and thus useful computer cleaners is now on the market.

It is available through Tony Parkinson Services and costs £14.95.

Tony Parkinson Services, 43 Pylt St, London NW3 5PP

### Button up

And would you well know about the latest that physicians undergo when you are playing the new sports games. They need to feel more, and end up a thin man instead of a fat one in the day.

Being a fit head, Kosmos, the owners of a number of arcade bars, have just converted their Power Shop for the C64. This unit is a joystick port adapter that connects just two buttons. One is used for the running action and one for jumping.

Originally developed for use with Hyper Sports, recently released by Imagine, the unit should work with other games too. It costs £9.95 but is only available direct from Kosmos.

Kosmos, Television Hse, 269 Field End Rd, Barking, Midd. M44 6LJ

### War — no fish!

Video and Chien — RTV's children's programme on the wonders of the universe will be back on your screens from August 1985.

Mike Green, national co-ordinator with his new co-ordinators, Steve Reid and Garry Saunders, Mike Sharp is the creative brain and producer behind it. The programme series will cover such subjects as car design, trucking, 'Holley' Cars, computer art and a special link-up with the French science magazine programme called *Science*, 'The World of Nature'.

Although it covers all aspects of life, the emphasis remains firmly on the most exciting competitions and the 'world's best'.

RTV, TV Centre, South Rd, Basingstoke, Hants



Clean it up.

NEWS

## Lightning fast

Lightning has announced details of a new Deluxe joystick that can make moves in the same place by incorporating two firing buttons.

The new joystick includes many features only found previously on more expensive units and has been developed to improve on Lightning's previous joystick, the JV 122, by using the suggestions of users.

The stick includes an additional automatic firing button and an extra firing cord with a standard 'D' connector. To aid one-handed operation the model is mounted on a rubber suction cup. It is compatible with Amstrad, Atari, Commodore, MSX and Sinclair systems. It costs £4.95.

Lightning's Home Computer director, Lorenz Capon, said: "We are delighted with the sales of our original joystick, which proved the £3,000 mark, and we are looking to this new model to continue its phenomenal performance."

Lightning, 341 Norwiche Rd, Northcote, London NW9 12 1RN

## Black box for Oric

Camara are now producing a stylish disc drive for the Oric Atmos microcomputer.

This three-inch interface has an internal power supply unit and is supplied with an Oric compatible operating system.

## Switch on

Merco Dealer UK has just announced that they have added the Dead Electronics Switchable Joystick Interface to their catalogue.

The interface is compatible with any four joystick adaptor such as Quiksilver and Sunstar. It is able to work with any Sinclair, Commodore or Casset-Commodified Design board within all programs written for the Sinclair Spectrum or Spectraboard.

It is available immediately and details at £12.95.

Merco Dealer (UK) Ltd, 28 Greenfield, Watney Garden City, Herts AL7 4DS

## Amstrad communications

Amstrad users will soon be able to interface with the real world using the new products from Spectrum Software.

The Multi-Port is claimed to make "all other interfaces for the Amstrad obsolete". It boasts a full 80386 word game with a software controlled land mine and the correct voltage supply using a matched mode unit. There is a 25.5K parallel port which is totally compatible with the PC's star port. The board also accommodates two add-in's: ROM's with the Multi-Port ROM being stored in standard.

Added to all this the unit is available, so that disc drive

operation, or even another multi-port can be added. There are no compatibility problems between the port and the disc or tape system.

The Multi-Port ROM is a communications package that can be used to access most of the major databases and information systems. It supports Telecom Gold, Pascal and Multibase Graph and allows you to use a wide range of modems, currently available.

In order to bring the Multi-Port on and on the Amstrad the display is given four colours as the 40 column screen. This is the full Telecom range but gives a good approximation, if a colour. Paper can be printed, viewed and transferred by the software and there is even the choice to try telesoftware

by means of an experimental format.

As part of the development of this hardware and software package, Spectrum will soon be launching KEYTEL, a new multi-port software board. The system will be using one when the special phone number will be allocated. Users of Multi-Port will have access to the system due to an HD link into the software.

The unit will cost £25.95 and although not available yet the company are very interested in hearing from Amstrad users thinking of operating their machine.

Spectrum Software, 72 Cowen Rd, Newcastle, Newcastle NE6 6PW

etc., and all manufacturing cables.

Especially dropped in Mark, the system can support up to four disc drives in Double Density Mode whether they are 5 1/4 or 8 1/4 inch drives, single or double sided.

The unit contains an on-

board expansion port enabling the user to connect other peripherals and is operational simply by plugging into the back of the Oric Atmos.

Camara Ltd, Pines Trading Estate, Broad St, Gillingford, Surrey GU2 3BH

## Software link-up

Silversoft, an established software house, has just released details of an agreement made with another UK based software company, CLR.

This arrangement means that CLR will take a quantity of share equity and become more involved in the running of Silversoft, while Silversoft will benefit from the sales experience of CLR.

Andrew Preece, MD of Silversoft, feels the union will be mutually beneficial. "We have been very active developing business and educational software, while CLR has remained at the forefront of the home computer market."

Charles Chambers MD of CLR is equally enthusiastic. "This link-up will help achieve the combined growth of both companies."



## Watch out

Sony has come up with a useful little accessory which will help you carry plenty of important information around with you and someone is up to the touch of a button.

The Sony UC-1000 is a wrist watch terminal which comes complete with a compact size QWERTY keyboard which allows you to input data using an electro-magnetic system which needs no wires for connection. To enter information into the wrist terminal you simply dial it in to the keyboard and type in the information which you wish to store. The

terminal has a four line display and has fully adjustable contrast so that it is easy to read.

Sony's Steve Gould said "You don't need to know anything about computers to work this wrist diary. It stores various kinds of information such as time, alarm, schedule and memo data and at the push of a button you can choose which type of information will be displayed."

The Sony UC-1000 wrist diary costs £99.95.

Reuter, Berkeley Ave, Berkeley Sq, London W1



A hand's memory

## Naughty naughty

Swearing by your home computer has taken on a new meaning since word of obscene words — the obscene band aids of microcomputing — discovered the system was ideal for exploring the under areas of the English language.

Defining explicitness has become a rule concerning chat for users all over the country, now MicroLink, the new nationwide service for the micro market is evaluating a proposal that promises to lock up

The Naughty Words Editor will automatically offend obscenities before they even reach a terminal.

Tim Clarke, who is in charge of the project explained how the new wordy watchdog is used. "You usually create a text file or glossary of naughty words or phrases, so when they turn up in any message, the whole of the text is pulled out and put in an obscenity file. Later the messages are checked over for the operator to see whether it's safe for them to be released."

A testing problem with the Naughty Words Editor is that it locks in so certain obscenities that pure or innocuous words become naughty words such as rule use that themselves downgraded to the obscenity file.

A partial answer to the problem is to create a list filled of offending phrases rather than individual words but the ambiguity of the English language means that naughty words can creep into a list unnoticed.

Despite these larval difficulties, the company behind MicroLink — Data Base Publications — are confident that the Naughty Words Editor will be the answer to this new problem.

## War film

German microcomputers were recently visited by them. They were involved in finding a program based around the most PCG release, The War Game, which has become a great commercial hit since its launch a few weeks ago.

MS, 442 Boney Street St, Coventry CV4 5EQ



Three Europe on the

The modern manufacturer Micro Technology has produced an advanced communications package for the IBM computer called DataLink.

The IBM based package forward allows access to a

variety of systems including French, Mexican, Indian, Israeli and non-western communications.

It also enables features on the Micro command file, a powerful command facility and

micro/ware downloading capabilities.

The price of £29.90 per UK delivery includes a user and technician key pack.

Micro Technology UK Ltd, St Peters St, Ipswich IP1 1BB





**Both interfaces and the new Jaycard are assessed in this week's reviews. There are products for all pockets in this batch of goodies**

# TEARS OR JOY

It's difficult, sometimes, to know when to say when you've tired with reviewing Jayco's joystick interfaces. After all, they all do the same job and the same job is often just a matter of how much you're prepared to pay for a nicely designed case.

Well, when a lot of thoughts, and half a packet of chocolate digestives, is required to make the three new interfaces I had to review command the reader from the basic, no frills number, to the more expensive end of the market with every thing but the kitchen sink attached.

It's a pleasure to say, from the start, that all three are well designed and constructed, which is something that you can't say for some of the others around. They all fit the Spectrum's popular port nice and easily, and they're no "two", so you don't put any strain on the cable/potentiometer by feeding them in all. They don't wobble, rattle, or have any wires showing, and are all robust enough to stand up to the wear and tear of hours of jiggling.

Starting with the least expensive of the three, we come to the new Kompton Jaycock interface. This is a new version of what is now (and is fast becoming) the standard interface for the Spectrum, and is, therefore, compatible with the vast majority of Spectrum software. It has been redesigned to make a join more suitable for use with the Spectrum Plus, and simply offers a single joystick socket. The instructions are clear and concise, and include details of how to connect a couple of non-compatible Sinclair/Pico games as well as a short program to test the interface from BASIC; both of which are good ideas, and it's nice to see that Kompton is thinking about these details. At £9.95, it's fairly basic but is as good as anything else in the under £10 range.

Next up, at £14.95, is the Smeadish Programmable Interface. Equipped with a small LED on/off indicator, and standing horizontally, so that it fits in your drawer, this can be "programmed" for use with absolutely all Spectrum software. Obviously this is worth while, but the versatility requires a little effort from the user before it can be exploited.

To program the interface you

first enter "programming" mode, press the switch on the front of the card. Then, one at a time, press all the combinations of keyboard controls required for the program you want to play, and, as you do this, manipulate the joystick, and the computer does pointers for controlling the game. If, for example, you want to program the start fire for JSW, you would have to press each of the controls for left and right movements while simultaneously moving the joystick inside left and right. Then, if you wanted Wally to jump to the left or right, rather than just walking, you would again move the joystick left and right, but this time with the joystick's fire button pressed to add the jumping effect.

That, that, as it is, seems very fiddly and is not the way to program the interface for beginners (which means some quite complex manoeuvres), but after a while I got the hang of programming the joystick and can now get a ready to play, just about anything in only a few minutes.

Finally, weighing in at £14.95, is the Kompton Pro Jaycock Interface. This one has got everything for £14, a very nice little case, but I'll come to that later. Like its simpler little brother, this is a real Mac, one that has that when inserted into the Spectrum port, with all the buttons on the case facing upwards. It has three joystick sockets, one of which is a combination of normal Kompton standard and carries around compatible. The other two sockets are adapted to Sinclair's own interface. I needed and provide the possibility of two players having joystick played in simultaneously.

Besides that, these three sockets mean you provide compatibility with just about any piece of software on the market, but we have any of the fully programmable required by a programmable interface — you just plug in and go. Again, Kompton has provided clear instructions with the interface and even gone into the details of how the IN command is used to read the signals from the joystick.

In addition to all this, the Pro also has a socket for ROM cartridges. Frankly though, I'm not sure why the feature was included, after all, ROM based

software simply won't plug in for the Spectrum (probably due to cost), and it took me a while to get to work down half a dozen pages of software on ROMs in order to get them on the interface. Of course, once I plugged the ROMs in, they all loaded instantly and worked perfectly, but even there it's a little ROM software about — and when there is, you can't get cartridge — I don't see that the inclusion of a ROM socket on an interface is really very useful, especially since it must add to the cost of the product.

If Kompton was to produce a version of the Pro with just the three sockets on their own, for about £15, there that would be undeniable value. As it stands, it is a good value for what it offers but with the ROM socket it simply offers a feature that very few people will need.

Of course your choice will be dictated by the amount of money you've got spent, but whichever one you buy, I doubt if you'll be disappointed by any of them.

C.J.

**Kompton Pro Jaycock Interface**

Price: £14.95

**SPECTRUM**



**Kompton Jaycock Interface**

Price: £9.95

**Manufacturer: Kompton Microelectronics**

**Address: Super Way, Kompton, Bedford**

**SPECTRUM**



**Smeadish Programmable Interface**

Price: £14.95

**Manufacturer: Smeadish Electronics**

**Address: Freeth Trading Ltd, Dorebrook Lane, Althorpe, Hants**

**SPECTRUM**





## SOFTWARE



## Skyfox

Skyfox represents yet another top forward in 3-D graphics action and the quality has to be seen to be believed. Falling into the tropic action field rather than flight simulation, you use conventional means on eliminating the enemies than keeping Skyfox in the air.

The score is set with your colony being invaded and you must save out the enemy force before they destroy your resistance. This means to accomplish your mission in the 30-odd Skyfox you must use which is heading with five laser-armed missiles. Five guided missiles and unlimited laser shots.

The mission began with a view of the main computer at home base. This vision Commander looks graphics to indicate the status report of enemy craft and the colony's resources. Moving the cursor to any of these screens automatically makes the computer come that screen and player could see be reunited by selecting the screen facility which gives a more detailed picture of what is happening in this particular area.

For example, if you want to know of an installation in order attack, simply select the screen, view as well you can see tanks, planes and helicopters in the area. The installation will also be shown with a status readout which indicates the strength of its protective shield. Once the shield reaches zero the installation is destroyed.

After a quick check of the battlefield exposure the mission can be started. The score changes to a view through the player cockpit, with the exceptional array of indicators, the most important being fuel and shield levels. If either of these reach zero then you're a dead fox.

Price £12.95

Publisher: Amstrad

Address: Asphale Hill, Polesia, London SW9

As you launch from the take off, take flight the first thing that you notice is the superb scrolling graphics which scroll in all three dimensions at once. Usually the second thing that strikes you is a valley of cliffs from enemy tanks.

Skyfox is controlled by joystick and speed can be selected by pressing a number key or, for a quick getaway, the afterburners can be engaged which boosts the power to maximum for as long as the relevant key is pressed. I found the afterburners useful to get me out of trouble in aerial dogfights where a lack of time to place you at the centre of a ring of converging planes spinning fire and making you should level drop like a stone quickly followed by your hapless.

Each battle scene is shown on your radar screen and, if you're lucky, as the game ages as you will find it more difficult to lose the enemy. This is where the laser computer comes in again. As long as your base remains intact, the computer can be used to fight by pressing a key. This allows you to look the computer onto a chosen area. The alternative is to search to outposts which takes you to the nearest enemy forces, very useful in mapping-up operations.

Now for the bad news, the game is disc based because there are two basic backgrounds, one above and one below the clouds. To allow efficient memory-use there is a cloud base stretching from 1,000-10,000 feet, which means you view from the clouds from white as the disc loads the new scene.

With five skill levels to choose from and 12 battle scenarios, the game should hold the interest for a very long time and the graphics will make you want to look on and buy a disc drive just to run this game.

E.J.D.



## Dynamo Dan

Despite having an extremely soft side Dynamo Dan is one of the most accessible platform games that I've played in some time.

It's not at all original. The plot requires you to save Dan against the castle of Dr. Blimbo, something for older of dynamite applied to blow open a castle containing some action pieces.

But what makes this game stand out from so many other 3-D games is the sheer funness of the game. All the games are incredibly successful, with ladders and lifts, various room themes and one of each room, interesting traps, and an enormous variety of deadly spikes having your way.

The graphics aren't as the Kung Fu Kick league, but they are very professional. All the graphics are nice and large and smoothly animated. One final design feature that I liked was that when you collide with a wall or lose a life, the sprite is destroyed, leaving you only dead to the next obstacle. This means that you don't keep on losing all your lives on the next obstacle, and keeps you going on frustrated by a particularly difficult task.

As well as the dynamite, there are a variety of other objects that you can collect — food to boost your energy level, and test tubes which contain viruses that add to your number of lives — and of course, all are sucked away in tricky little corners.

My only fault about the game, is that as it is it is a little expensive, though not outrageously so.

C.J.

Price £6.95

Publisher: Mameco

Address: Mameco, Hco, Weybridge St, London EC1A 2EN

C64



SPECTRUM





### Nick Folde Plays The Open

Iron-driven games seem to be popping out of the woodwork at the moment, but this is the first sports simulation I've seen that you drive.

Before playing 'The Open', I thought that a golf simulation would probably turn out to be quite boring. The sports which usually lend themselves to computer games tend to be the frantic, action-packed ones such as football or tennis. However, after a few holes I actually turned out to be quite enthusiastic. It isn't as incredibly moving game, but it is absorbing and quite challenging.

The game menu offers a choice of clubs, view up or down, scores, names of the current hole, strength of shot, and a running score that disappears the angle of your shot.

The choice of club is very important, and if you choose a club that is wildly inappropriate for the shot you're going to play, then your 'caddy' will ask if you are sure that's what you want to use.

Each hole has a set of instructions accompanying it, including a 'your' screen, and this adds a computerized edge to the game. I managed to get one hole down in 10, and then I was hooked.

The graphics are superb, and the iron system is very simple to handle (unlike the system used in some other games). Like the real game, 'The Open' is ambitious in a quiet sort of way, and once you've started it's hard to stop.

**Price:** £9.99

**Publisher:** Argus Press Software

**Address:** Liberty House, 222 Regent St, London W1



### Fearless Freddy

Any platform game worth an axe features bits that carry the hero either up and down the screen or horizontally across it. Frightful Freddy explores such bits, as you move between various platforms, rescuing various prisoners before they become trapped in time.

In the true platform tradition, you must dodge the fireballs, collect the various objects, jump onto lifts and avoid landing in a burning cauldron. This is hardly original but the graphics are quite nice and this would have made a good video game for the Dragon.

Unfortunately this whole notion of the program is exceedingly poor. The collision detection routines are among the worst I've seen over the years. Some of the objects are pretty large, yet it did not always register when I walked over one of them. The quality of some of the movement in the game left an awful lot to be desired too. This is rather a shame, as the setting and a few cool touches, such as the time-control, indicated that the program had the potential of being extremely interesting.

The program progresses, for me, all this in bad with fiddly follow-up. A number of sub-weapons have been tried, but they are just too complicated. I gave up at 11:00 or 12:00. Just because the product is cheap doesn't mean that it shouldn't be fully debugged and tested.

A three-screen product made all the more for the time-sapping music that I have ever heard on a computer game. The non-dart resistance of Colonel Roger and when the Score was in trouble to leave in as the game was replay. C.A.

**Price:** £1.99

**Publisher:** Microdeal

**Address:** 41 Tracy Rd, St Austell, Cornwall



### Battle for Midway

An adaptation of a successful Commodore program — to don't be misled by the name requested label on the instruction manual — the cover apparently stating it's not compatible.

Three levels and six game speeds are offered. As the manual suggests, this is an extremely complex war game designed for the sophisticated player, when the instructions and rules are carefully learned, it is a fascinating brain teaser.

Battle for Midway puts you in command of the United States Pacific fleet in June 1942, six months after the Japanese attack on Pearl Harbor. The battle was the turning point of the battle for the Pacific and a turning point. May be to the Japanese would have provided a stepping stone for them to attack Hawaii and then the United States.

You are presented with a large wide map showing an overview of your forces, with a 10-hour clock at screen top, a wheel command controlled by you, and colored dots representing the ships. Because these involved the key, give access to information on the computers located at gunnery, with the game clock stopped. With the com-box open individual task force given detailed reports on ships and aircraft.

Units can be moved, aircraft launched and landed, as well as used to search and make air strikes. Of course, primarily the Japanese will launch attacks on you — the U.S. forces.

Unfortunately, the Japanese have beaten me every time so far, and Hirohito is President! T.W.

**Price:** £9.95

**Publisher:** P S S

**Address:** 432 Stanley Street Road, Conway C76 1DG



### Flipped



### Hooked



### Keen



### Towning



### Cometone





### Music Studio

One thing I've noticed about Amstard software is that, in spite of its high price, it's sleek and portable in a very high standard.

This package transforms the way it provides a complete environment for the production of music. Whilst some knowledge of music theory is necessary for first class results, a music "grammar" is provided for the novice.

In either of the two operative modes, you may use any one of 15 sounds, each with an identifying colour. These sounds are created by a sound synthesiser system which offers complete control of all sound parameters. The screen displays an extensive sound panel with sliders for the adjustment of the sound parameters. To give a final polish to your composition, you can vary the sounds while the tune is played.

The main composer screen allows the creation of songs by placing notes on two musical staves which scroll across the screen. The system works like the musical staves of a word processor allowing the copying, deleting and manipulation of the notes. The full range of note types are supported and different sounds can be identified by the different colours of the notes. At any time you can save your composition and make changes or get a hard copy of the notes on your printer.

The music panel has features in a similar manner but with less emphasis on musical theory. In all modes, icons are used with a joystick controlled pointer for the selection of options.

This package handles with features and is really quite amazing. **R.W.**

Price £14.99

Publisher: Activision

Address: 11 Harley House, Marylebone Rd, London NW1 5SD

G64



### Popular Classics

No, this is not a compendium of those games which have hit the software charts but an addition to Commodore's Music Museum.

The package consists of a cassette and book. The book contains the music for twelve well known classical works, and the cassette has all that is needed for those pieces to be played on your Commodore. In addition, there are options included in the program for you to play along with the computer.

Amongst the options available is Concert mode. In this, the computer will run through an repertoire. My children loved this part as they listened and used to spot the music from TV adverts. Another option is Simple Key Mode — which allows the user to play along by just tapping out a rhythm on one key.

Rhythmic mode shows you through a selected piece, or score, a finger pointer to the note and waits for you to play before moving on to the next note. This caused much misery among the family as I played The Hungarian Dance at top speed and was rewarded in appropriate intervals with attitude accompaniments.

The program can be used with the Music linker Keyboard overlay but this is not essential as included in the accompanying booklet are instructions as to which computer keys to use.

Overall, this is a fine package. It won't turn you into a concert pianist overnight, but if, like me, you enjoy music and have never mastered an instrument, it may give you hours of fun and a sense of achievement as you play The Toccata's Song or Eine Kleine Nachtmusik. **M.W.**

Price £12.99

Publisher: Commodore UK

Address: 1 Haversay Way, Weldon, Cusby, Northants NN16 8JX

G64



### Tea Time

After a few hours of playing the same game, I decided upon the phrase, "infinite game, soft trials" as a summary.

The game is really three separate games, but very well linked together. You control a saucer and in the first game must collect drops of tea as they fall from the sky. The saucer then moves across the screen until you must drop it in a cup and will also empty your pot if you get close enough to it. You complete the game when you have collected 10 drops.

The second game has you dodging the rapid rain (it is "thunderous" indeed) and a whole procession of smaller games. Playing this has a unique successfully, takes you onto the final stage, the garden, where some left and right keys you must collect all the tea that is on the table staves and finally reach your goal, the tea cup.

The program is a collection of text and word games but an achievement count from the garden stage. Once you have finished these three screens, you go back to the first one but have the additional feature of a bonus matching screen the screen (comparing you with Floyd's The Wall) which will match your pot if it connects.

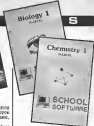
Apart from the game's progressive difficulty, the other strong point that sticks out in my mind is the graphics. They may not be Ultimate standard, but they are good by Dragon standards and the degree of variation which first found computerised expression in Music Master and its clones is wonderful. Add to this bonus screen, an excellent title page and a high score and well — why are you still reading — go on and buy it. **C.B.**

Price £1.99

Publisher: Microdeal

Address: 41 Tree Road, 2, Aintree, Cornwall

DRAGON



### Chemistry 1/Biology 1

Though these topics purport to be part of an educational "tutorial" series, in fact they contain much, they merely check if you know what they know, and if you get the answer wrong first time, after you one or two letters of the answer is a clue. Your score is then added up at the screen and shown as a percentage. In other words it's the rather old but quite formal.

Finally, although the author has attempted to brighten things up with the use of a selection of colours word sounds, together with an interesting breakdown of a classic melody in a single voice, the whole thing is very dull. Another loading screen tells the name of the program, and a number of programming bugs are apparent at times.

The score table shows five right answers and five wrong ones, but your score is 49%. The message is told you you're the pits for scoring nothing disappears before you can read it. Sometimes, the box in which the cursor and your answer are supposed to appear isn't there, and when you type in the answer, it appears at the middle of the questions! And to cap it all, there are spelling errors.

Thus, in my view, is quite unobjectionable as a game, but almost as "educational" offering.

In essence what you are offered here is one program with two sets of data for different subjects at a price that you can only be described as extortionate. A pitying. **D.M.**

Price £7.95 (each)

Publisher: School Software Ltd

Address: Meadsdown, Rahem, Louth, Ireland

AMSTARD





### Go To Hell

The press release screams promising: this game says that it's "two different you's going to be hard pushed to do it justice!" But it isn't, and it's not.

In fact it's one of all different, being just a mean game made up of some 30 odd screens of graphics, deadly spiders, and an assortment of traps, all depicted using fairly bloody graphics and a combination of colours that are a bit of a strain on the eye.

The game involves wandering around Hell, in search of a number of screens needed to save a friend from eternal damnation. The music is fairly standard stuff, varied up by some graphics, but not likely to distract Knight-lose from the top of my all time favourite list. The music is large enough to make the game fairly challenging, though I found some of the corridors too narrow to allow much manoeuvring in order to fire at the objects around me.

I think it's revealing that Triple Six seems to be concentrating on the graphics aspect of the game rather than on the quality of the game itself! It's graphics — graphics will win — but everyone will want it to be the end, not because of gritty graphics but to be tough to convince me that this is anything other than a fairly average mean game.

At 16.99 it's a bit expensive for a game that is really rather dated. **S.B.**

Price: 16.99

Publisher: Triple Six

Address: PO Box 185, Morden Road S18 1YA



### Beetle Quest

The stages of adventure games available nowadays is enormous. The computer range from quest space to prehistoric times. Some have to-collect graphics, music and scenarios, others incorporate arcade shoot-ups as part of the problem. So to make its mark, a new adventure has to be something special. Beetle Quest is good but not special.

It is an old set adventure, rights using Quest and its ideas to distinguish it is none — The Evil Four — John, Paul, George and Ringo. To solve the problems, it helps in the back into the words of the songs they wrote which have become part of our pop-culture language.

It takes 12 minutes to load. Then you are in a message search for "various objects of interest to return them to the other ladies". It's not easy to get going and you soon discover that the "finding you're being followed" is a warning that a certain Maxwell House is after you, silver hammer in hand. Very soon you'll suffer the loss of his school teacher.

Publisher, Number 9 Software, offer two other titles in the same vein to learn a lesson — A Day in the Life, Part 1 and Another in the Lineover. But I can't say that my opinion is really only correct that I'll be looking out for them. **J.J.**

Price: £18.95

Publisher: Number 9 Software

Address: 47 St George's Avenue West, Walswood, Newcastle



### Happy Hour

Happy Hour is an arcade/shooters. The basic idea is simple: You sit in many pubs as you can, drink as much beer as you can, collect as much money as you can — points awarded — while avoiding the fire, the police, and security dogs. Butters and that too — until you fall over or get arrested.

On the left of the screen is a meter panel showing the state of your beer, the number of liquor utilized and the number of points collected, together with the amount of money found. For the property sum of 100 you can achieve a pub license which will tell you if there is a pub in the adjoining square. Don't catch the bus in go into the wrong house however, you get thrown out as you wait.

Although the way is far away from the plot of P.D. Q, it's still fun to play. By today's better game standard, it's let down by graphics. You sit at a window table, but the scenario's not quite right. It's all rather flicky, screen changes are rather slow, the change of perspective is odd, and when you enter a pub for a bar, the bar and standard bar-mat covers about the main character.

Which may become more and more difficult to control as he tries more past. Scarcely an province for controls is made, and, perhaps I'm a purist, but would you be amazed by a game which featured an offer kind of action getting a bar? **D.M.**

Price: £1.99

Publisher: Scorpia Computerworld

Address: 30 Corn Exchange Buildings, Cathedral St, Manchester



### A View To A Kill

The basic is a long bar of games based on film/TV programs. A View To A Kill is actually quite good. First goal but still pretty enjoyable.

The music includes three games based upon scenes from the film, plus an episode title sequence similar to them in the scene of Blood Hound.

The first game is a sort of 3-D maze, representing the scene of Paul, though which you drive in order to catch May Day. The graphics are computerized, but this is probably the most compelling of the games.

The second, as in the burning City Hall, is a night room driven adventure, in which you have to investigate the fire and the firefighters, fleeing from the flames about to engulf the building. Though the room seems not to be sophisticated as that used in Burning's Shadow, the on-screen and sound effects make up for what might otherwise be a fairly standard home object game.

But, my favourite game is the Golden Valley Mine. This contains two different types of game to produce a hybrid platform game/arcade driven adventure. This is similar to many what to the old Double's Cave games, but a more sophisticated. Running and jumping through the cave network, you search for a bomb that must be defused. But you can also use the room system which includes climbing past and dismantling equipment.

None of the games are great individually, but the three together are good value. **C.B.**

Price: £10.99

Publisher: Domark

Address: 304 Worples Rd, London SW13

SPECTRUM



C64



SPECTRUM



SPECTRUM





### Slide

Cast your mind back, aged reader, to the Christmases of your youth. Forget the holly, the sticky Christmas pudding and concentrate on your speaking. Do you remember solving a slide puzzle usually consisting of 15 hole interlocked squares with either letters or numbers on them. One section of the puzzle was empty allowing you to slide the other squares around creating either words or numerical sequences.

Microdeal has computerised such a puzzle and presented it on the Dragon for a bargain price of £1.99. On loading, you are presented with a choice of attempting the decimal slide puzzle, the hexadecimal version or having a go at the harder puzzle of the three — a map of the USA.

All three puzzles are set out neatly on the now familiar green background graphics mode. Moving the pieces around the puzzle is simply a matter of using the cursor keys though I found the movement just a fraction slow. The numerical puzzle consists of 15 interlocked squares making the puzzle quite a frustration. I never seem to figure though I get quite close. With these type of puzzles the only solution is time and patience (well, that's my excuse anyway).

One thing is, this there's no way to get back to the beginning. This means that if you get over on one mode, you must go back to try another. This was the one major complaint on an otherwise enjoyable game.

C.G.

Price: £1.99

Publisher: Microdeal

Address: 41, Thuro Road, St Austell, Cornwall

DRAGON



### Pit Friend

Pit Friend starts well with synthesized title music playing melody and backing chords. For anyone with a Dragon who can only coin a variable loop out of your machine, Pit Friend's music is quite impressive — a version of the Eternamax.

The game is rather similar to Hammer by Big Byte which found its way onto the ZX81 and the Spectrum. You are a character wandering around a five-level dungeon searching for pieces of a broken shield. Avoiding the Pit Friends, you can go up to above villages and at last, visiting all the levels. If you get down to a Pit Friend you can throw a knife at it, hitting a stone immediately. I found the journey of these weapons a little suspect. You appear to have an unlimited number of knives to lob at the beast.

You can choose the colour background. I found that gold old green background with red, yellow and blue foreground colour mode was the only one that was truly playable, the other two being either painful on the eye.

The game is too easy to solve, it took me just two tries before I had collected all the pieces of the shield without any occurs running out. On completing one shield, you start the game all over again.

In conclusion, a fair game, but not really exciting or variable enough to make it a worthwhile purchase even at this price.

C.G.

Price: £1.99

Publisher: Microdeal

Address: 41, Thuro Road, St Austell, Cornwall

DRAGON



### Bandit

Do you remember when you first scrolled by the screen and were lured by those arcade machine bells with scores like Prince of Fun and Penny Pin?

Bandit, perhaps as a refuge from the run, you were tempted to gamble some of your hard-earned cash on the vain hope of increasing your spending power! And the most satisfying of these has always been the one armed bandit.

It has a hypnotic power of its own with the ability to keep you performing a hopeless task — accumulating more money!

This computer version captures a lot of that quality and, given a bag of money — loaded chips by your side, accurately recalls for me those moments of relief.

Unfortunately you have no choice of colour on the screen which spoils an otherwise lovingly detailed slot machine. It is black on buff however does make striking crystal clear including the movements.

You start with a pound and have to pay 10p a go. All money is added and deducted accurately on screen. Other features include wedge and hold which make this a very accurate simulation. The apples, pears, cherries and lemons are there with one or two little additions like a couple and four additional.

As to how generous it is, well I managed to accumulate about four pounds before gradually going down from my original state. I never managed to hit the top prize of 100 pounds and I usually ended up the poorer. A good game therefore to have at a gathering of friends if you act as the bank!

M.P.

Price: £1.99

Publisher: Microdeal

Address: 41, Thuro Road, St Austell, Cornwall

DRAGON



### Robin Hood

Cheap software is good news and especially for those Dragon owners who feel a little outcast in the moment. Microdeal has long been associated with the computer and some of its best games.

The trick, as I understand it, is to design a playable game which has become old hat and rethink it. In the case of this game that is what seems to be offered.

You are Robin Hood and your mission is to rescue Maid Marian from the clutches of the wicked sheriff of Nottingham. You struggle up-slopes, collecting gold as you go, running and jumping over platforms. The Sheriff is hurling stones down to King's side and on the upper levels you also have to avoid arrows. The graphics are very good, smooth and certainly up to the best standards achieved in the more expensive games.

There is also a bonus screen should you rescue Marian which involves collecting falling leaves. Not that it is.

A joystick is needed to control Robin as what turns out to be a very playable little challenge. The rocks being thrown are accurate and should you be hit or fall off the platform you tumble and the run is over.

You are able to choose between black, buff and green screens and instructions are scrolled neatly in the beginning. This game, of the current batch of five I've been given, represents the best value.

M.P.

Price: £1.99

Publisher: Microdeal

Address: 41, Thuro Road, St Austell, Cornwall

DRAGON





## Toppler

Build up, roll up all the fun of the fun. Well, at least one of the fun! A shooting gallery that offers you some fast moving targets.

With these pocket money games you aren't going to get much variety, with the one you are given an interesting challenge.

At the beginning you can choose between black, buff and green backgrounds but it's best to go for the darkest resolution, black. It's joystick controlled and once you have pressed the button the targets go across the screen from the top and settle down three levels in ascending style. You too a tin man, roller ball, rabbit and duck but there is also a bonus target which you have to avoid.

You have 40 bullets to clear the 50 targets in a generous time limit of eight minutes. I never did go the whole length of time. One of the problems is that if you don't clear the ducks fast enough, by the time they've gone round three times you lose five bullets for each duck through. In addition to that if you hit a bonus target then you only do you lose this potential score but they all turn to ducks. I never did go to the bonus screen where a tank is supposed to appear. This is an added incentive too after that you go back to the original gallery.

Quite an addictive game and demanding some skill in aiming your shots. At this price I would recommend it as one of the better choices.

M.P.

Price: £1.99

Publisher: Microdeal

Address: 41 Tress Road, St Asaph, Gwynedd LL25 5BE



## Data Fall

In the beginning there was the bat and the ball. Since then you have had a few variations but, ball and wall, tennis players, and, more recently, all action football players or basketball players. Now we are taking a few steps back again.

This game presents a very little novelty and graphically is equivalent to something you can type in yourself from a published listing. Even this might make you favourable a computer. It's not what it is designed.

Your cursor is at the bottom of the screen and moves left and right by the joystick. From the top various shapes come tumbling down at a randomised pattern which changes that you have to carefully dash from side to side and prevent their landing.

That's it! Well if you're one through you lose a chance. Keep clearing the screen and it speeds up a little until you fall asleep flat.

Then, I'm afraid, is a bad example of budget software which should never see the light of shelf space. Particularly true as Dragon software is difficult to find in any shop. I can only hope that more people are going to take hold of the screen which act to customer problems.

M.P.

Price: £1.99

Publisher: Microdeal

Address: 41 Tress Road, St Asaph, Gwynedd LL25 5BE



## Bubble Blaster

The quality of these cheap games varies a tremendous amount. You could go a long way before finding anything that is playable and useful.

To start with you can choose your colour background which also affects the detail hence most people stick to black. It is a game played by one joystick which allows a smooth control of what graphics there are. There are the good points.

The bad news is that all you do is move from left to right powering bubbles, which look a little squashed, from leading to the bottom. You are given five chances stacked on top of the other which you must use to block the bubbles. If you let one through you lose a bubble and this makes it increasingly difficult to prevent further landings.

Those with of these blasters are visible at the top of the screen and if you survive the wave then more appear. A score is accumulated but there are no further developments.

Usually, I find a quite attractive but not a game that will challenge you or keep you guessing. Not frustratingly addictive and could have the bubble of success to be enjoyed by Nintendo, whose name is not revealed and the title screen back — which is not surprising really.

M.P.

Price: £1.99

Publisher: Microdeal

Address: 41 Tress Road, St Asaph, Gwynedd



## Activity Centre

Having been flipped by Temple from the same company, I eagerly loaded Activity Centre. The packaging seemed to herald a unusual merge of computer and word processing graphics and animation. The I quote 'no'!

I suppose I had very high expectations, but I was disappointed. The tag "wordprocessor" is a bit optimistic. It's more a musical graphics package which permits use as the soundtrack. Nevertheless, the possibilities of such a package are quite extensive. It could be used for educational games, adventure games, etc. Maybe the music and animation it could be used for poster design. Unfortunately Activity Centre proved not up to the task or game idea. It can't seem to do, only display it.

The graphics screen allows you to write, move, and then, instead of using two joysticks. There is a copy command — useful — and a fill command which only fills rectangular areas — useless. Try filling a circle using this package. The interactive screen allows you to design two options and create a 30 step movement path. By moving both options together you can produce a moving bird with flapping wings. The music section involves loading a different program module. It gives the standard range of tempo, pitch and duration control, but for only one voice.

The biggest criticism is that it is all very slow, particularly the graphics routines, loading pages and refreshing from graphics to move and back. Overall I suppose it offers quite a lot at a reasonable price if you're not the patient.

E.J.

Price: £14.99

Publisher: Aquas Print Software

Address: Liberty House, 123, Regent St, London W1R 6BA









# MACHINE CODE — THE EASY WAY

**David Ellis shows how to save your screens in the fourth part of our popular series**

In the last article there was a list of comparisons between certain machine code and BASIC operations. Of particular interest were the two 2048 repeating block load instructions **LDOR** and **LDIR**. Using just two bytes of storage, they are very powerful. Try entering and running the BASIC program given in Listing 1. Lines 40 to 90, and 100 to 180, perform the same operations as the **LDIR** opcode. This is a repeating block load with movement. The address held in **DE** and **HL** are incremented on each loop. **BC** holds the count, and this is always decremented. When **BC** reaches zero, the loop ends. So what does the program do?

Well, the program saves a "screen image" of what's on the screen to memory (lines 10 to 90). Lines 100 to 180 do the reverse and copy the contents of memory back to the screen. Try it by typing **RUN** to save the screen to memory, and **RUN** 100 to re-display the screen. As you will see, it works, but at a much price! (about 3 minutes).

Now study Listing 2 which is the machine code equivalent. It's very similar to the BASIC program apart from the **LDIR** opcode which replaces all those BASIC lines. Try entering the values in the DATA statements by using the BASIC **LOADSAVE** as given in the first article.

To save the screen to memory (after **RUNning** the BASIC program) enter **CALL 3000H**.

The program will take under a second to complete. To recall the screen contents just enter **CALL 3001H**. The screen contents should be re-displayed in about the same time.

A better example of the difference between the speed and memory requirements of BASIC and machine code would be hard to find. The program will work equally well in Mode 0, 1 or 2.

One small problem does arise, and this is that the screen offset may be the same at both the saving and the re-displaying of the screen.

One way to make sure that the offset is always the same, is to issue a **MODE 3** screen. This will always set the offset to zero. Although the program works well, it does take 16K of memory to store the data on the screen. If you just want to save the use of a **MODE 3** screen. Overloading all the ASCII graphics characters then this can be done using just 2000 bytes, which is far more efficient. A register name, called via the "jumpblock" (**JMPB**), which will return the character at the present screen cursor to the Accumulator. All this needs doing is to set the cursor to each of the 2000 screen locations, and store the characters in memory. Listing 3 gives the details of the two routines, together with the machine code numbers to enter in the DATA statements.

In the first program two loops are set up. The inner loop counter is held in the **H** register, and this holds the horizontal co-ordinate of the screen. The outer loop counter is held in the **B** register which holds the vertical co-ordinates. Two calls are made via the jumpblock — one to position the cursor, the other to find the ASCII value of the character at that cursor position. The ASCII value is returned in the Accumulator. If the character cannot be found in the "character table" (e.g. if it is a graphics line) then a value of zero is returned. The character is then moved to memory and the memory pointer (**DE**) is decremented. This is repeated until all 2000 characters are completed.

Despite being in machine code, this will still take about 10 to 15 seconds to run, mainly due to the time taken in searching through the character table to find each of the 2000 characters. The program is re-display the screen

in somewhat different, and also a lot quicker. The **BC** register holds the count of 2000, and the **DE** register the memory address, as before. The routine called as **ASBID** not only sets in the contents of the accumulator in the screen at the present cursor position — it also positions the cursor at the next screen position — very useful! Unfortunately, this routine does corrupt the **DE** and **BC** registers, which is why they are **PUSHed** onto the stack before calling it and then **POPped** off the stack on return from the routine. The **BC** register is used as the loop counter in the same way that we used it in the second article. The last three bytes of the machine code program just re-position the cursor to the top of the screen. The constraints could be improved, but I have used them as they are the most easily understood methods.

Enter the two machine code programs by using the BASIC **LOADSAVE** program and the machine code numbers given in the DATA lines. Once you have **RUN** the BASIC program **CALL 3000H** will save the screen contents to memory (from 4000H to 47FFFH), and **CALL 3001H** will re-display the screen contents in the screen.

Try them out and you'll be impressed. The same constraints as before apply to the screen offset. In fact, the machine code routines to get the offset and set the offset were given in my **RDV** article (issue 121). See if you can "tag" them onto these two routines so that the offset value is first stored along with the screen data, and then reset when the data is loaded back to the screen. The DATA listings will be given in the next article as you see cannot fit into 2 cols.







# WINDING UP

**This week Shingo Sugluna ties up all the loose ends in the last of his series on graphics for the BBC**

**T**his week, I have listed the rest of the program we have been studying. As you can see, there is rather a lot of assembly language. I didn't want to include any machine code when I first decided to do this series but I'm afraid BASIC is just not fast or powerful enough when it comes to dealing with numbers at this level. However, you don't have to understand what each line does. All you need to know is what the various routines handle. So here is a brief run-down.

**In line 1578**, 450 bytes of memory is reserved for the machine code routines.

**1580-1595** define various constants.

**1600** sets where the machine code starts.

**1605-1650** this routine prints a character in the enlarged font, adding grid and also prints the numbers for each row. Each row is broken down into individual bits and if there is a 1, a white block is printed, otherwise, a full stop is printed. This is done for all eight rows.

**1660-1680** is a general routine for printing an eight-bit number in hexadecimal.

**1690-1700** deals with the case case of the character.

**1700-1740** turns the current character under development upside-down and prints it on the string grid by calling the first machine

code routine.

**1740-1760** this routine returns the current definition of character 235 as a sub-part of the memory.

**1760-1780** this routine restores the old definition of character 235.

**1840-1860** this is a general function which returns -1 if V is pressed in response to "Are you sure?" prompt.

**2000-2040** general purpose input routine.

**2050** this function returns the lowest significant byte of a 16-bit number.

**2060** this function returns the highest significant byte of a 16-bit number.

Although I haven't explained any of the constants in any detail, I hope you can now understand the general structure of the program and I hope you will find it useful.

1560DEFPROCassemble

1570DIM code 450

1580cword=16FF: cword ch=16FF: cword=16FF

1590char=670: spacechar=11: spare=1800

1600FOR pass=0 TO 2 STEP 2: PR=cword

1610IDPT pass

1620.enlarge

1630LD442a:JBRsearch:LD443:JBR cword:LD444:JBRsearch:L

BA445:JBRsearch

1640LD446:ST44char:LD446a:LD446b:LD446c(char):LD446d(char)

:JBRcword

1650LD447:out

1660LD44 char,Y

1670LD448:LD448:AND 448:AND 448

1680PR44:LD447:JBR cword

1690LD44:LD447:JBR cword:LD44:LD447:JBR cword

1700LD44:LD447:JBR cword:LD44:LD447:JBR cword

```

1710.dot PHA:LDA#44
1720.next JSR search
1730.PLA:DEC:BNE inner
1740JSR newline
1750INY:DPY#9:BNE outer
1760.DIR#0:cursor
1770.LDA#9:JSR search:LDA#11:JSR search
1780.DEC:BNE cursor
1790.LDA #31:JSR search:LDA#13:JSR search:LDA#15:JSR search
1800.LDA char:JSR search
1810.LDA#0:;a_loop
1820.LDA char+1,X:STA char,X
1830.INX:CP#8:BNE a_loop
1840.OTS
1850.newline PHA:TYA:PHA:TYA:PHA
1860.LDA#9:JSR search:JSR search
1870.LDA char,Y:JSR search
1880.LDA#10:JSR search
1890.LDA#0
1900.LDA#12:;line
1910JSR search
1920.DEC:BNE lines:PLA:TXA:PLA:TYA:PLA
1930.OTS
1940.hes
1950.PHA:LSR A:LSR A:LSR A:LSR A
1960JSR digit:PLA
1970.digit
1980.WD#13:CP#10:BCC clear
1990.BCC #4
2000.clear ADC#30:JMP search
2010.define
2020.LDA#23:JSRsearch:LDA#255:JSRsearch
2030.LDA#0:;d_loop
2040.LDA char,#:JSR search
2050.INX:CP#8:BNE d_loop
2060JMPenlarge
2070.upturn
2080.LDA#0:;up_loop
2090.LDA char,X:PHA:INX:CP#8:BNE up_loop
2100.LDA#0:;loop_up
2110.PLA:STA char,X:INX:CP#8:BNE loop_up
2120JMPdefine
2130.rot_right LDA#255
2140STA char:STA space
2150JSR rotates:JSR rotates:JSR rotates:LSR char:JMP enlarge
2160.rot_left LDA#255
2170STA char:STA space
2180JSR rotates:LDA char:JMP enlarge
2190.rotate
2200.LDA #PMH:char:LDY #PMH(char)
2210.LDA #44:JSR search
2220.LDA #PMH:space:LDY#PMH(space)
2230.LDA #44:JSR search
2240.LDA #char+1
2250LDY #space+8
2260.rot1
2270.RD 0,X:TYA:STY char+9:LDA char+9:RD 0,X
2280:TXA:INX:CP# #char+9:8NE rot1
2290.LDA #char+1
2300JMPY
2310CP# #space
2320JMP rot1
2330.LDA #23:JSR search:LDX #0

```



```

2340:rot2
2350:LD R space,X:JBR search
2360:RHL:CP R w?
2370:RHL:rot2
2380:RTS
2390:error
2400:LD R0:r,a_loop LDA char,X
2410:LD R0:r,a_loop
2420:RDL char,X:ROR A:DEV:RHL:r,a_loop
2430:RTR char,X:INX:CP R0:RHL:r,a_loop
2440:JMP:define
2450:reserve:LD R255:STA space:LD R0:A:LD R0:F0:A:space:LD R0:F0:A:space
2460:JBR:space:LD R0:A:LD R0:F0:A:char:LD R0:F0:A:char:JBR:space
2470:LD R0:JBR:space:LD R0:JBR:space:LD R0:JBR:space:LD R0:JBR:space
2480:LD R0:char,X:JBR:space:INX:CP R0:RHL:r,a_loop:JMP:define
2490:restore
2500:LD R0:JBR:space:LD R0:JBR:space:LD R0:JBR:space
2510:LD R0:space,X:JBR:space:INX:CP R0:RHL:r,a_loop:RTS
2520:JMP:define
2530:END:PRG
2540:DEF:yes
2550:PRINT:char?"Are you sure?":
2560:DEF:yes=GET:
2570:UNTIL:yes="Y" OR yes="N"
2580:IF yes="Y" THEN GOTO 2590 ELSE GOTO 2595
2590:DEF:input(prompt$,len$,max$,len$)
2600:PRINT:prompt$:at$="":Z$=0
2610:REPEAT Z$=GET:
2620:IF Z$=CHR$(127) AND LEN at$>0 at$=LEFT$(at$,LEN at$-1):PRINT:
2630:IF ASC$(mid$(at$,1,1)) AND ASC$(mid$(at$,1,1)) AND LEN at$>len$ at$=at$+Z$:PRINT:
2640:UNTIL Z$=CHR$(13):PRINT:at$
2650:DEF:pin(number)=number MOD 254
2660:DEF:pin(number)=number DIV 254

```





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# BEGINNING MACHINE CODE



**It's time to see if it all ADDs up in our Spectrum machine code for beginners series from Diana and Colin Smith**

**I**n this, the third in our series, we are going to cover machine code single byte arithmetic and the conditional instructions equivalent to BASIC IF/THEN statements.

For first, did you try making the sprite in Part 2?

To make a 4 x 2 character sprite, address 8000 should hold 4, and address 8002 should hold 2. The 8 sprite characters would then be held in addresses 8004 to 800B.

Let's start by individualising binary arithmetic which is used by the computer. This is coming to base 2 rather than to base 10 or the decimal arithmetic we humans use. A number between 0 and 255 is stored as a **BYTE**. This byte consists of eight binary digits or **BITS**. In the computer, a bit is really a switch that is either on (SET) or off (RESET).

A useful analogy is to count on your right fingers. If a finger is raised (SET) it represents a power of 2, if not (RESET) it represents zero. By holding up the values of the raised fingers, you get the value of the byte. This is illustrated in Fig 1.

A consequence of having just eight fingers (or bits) is that you can't have a byte with a value of more than 255 or less than 0.

Fig 1.

Power of 2 for the answer)

1 4 5 4 3 2 1 0

On ON = 1 or OFF = 0

1 1 1 1 1 1 1 1

Value of bit

128 64 32 16 8 4 2 1 = 255

Value of byte

**Example**  
1 4 5 4 3 2 1 0  
On ON = 1 or OFF = 0  
0 0 0 0 1 1 0 1  
Value  
0 0 0 0 4 0 1 = 17  
Value of byte

The first value between a cylinder memory, Microcomputer say is less a value modulus 256. If you exceed 255 you start counting at zero again.

e.g.  $230 + 3 = 3$   
(Calculate as  $230 + 3 - 256$ )

If you do a subtraction which would go below zero, you continue counting down from 255.

e.g.  $5 - 10 = 251$   
(Calculate as  $5 - 10 + 256$ )

For single byte arithmetic, the A register Accumulates the answer. So the instruction ADD A,4 takes the value in the A register, adds it to the value in the B register and stores the answer back in the A register. Similarly, SUB (SBC) takes the value of the A register, subtracts from it the value in the memory address held in HL and then stores the answer back in the A register.

You may now be asking yourself, "Can I tell if an addition has given a result greater than 255?" Luckily the answer is yes, or we really would be in trouble. Such an addition gives a "carry" for each number to store it in the A register. Instead, the clever little microprocessor transfers the carry to

the Carry Flag. This is a bit within a additional register called the F or Flags Register. This register is not used to store numbers. Instead, individual bits within the register are used to tell us more about the last calculation or operation on the A register.

If an ADD instruction results in a carry, the Carry Flag is SET, otherwise it is RESET. If the answer is zero, the Zero Flag is SET, otherwise it is RESET. The Sign flag is SET if a subtraction gives a negative result, but remember that the answer in the A register will still be positive.

The microprocessor updates these flags automatically and we can use them if we need to.

So far we have been using the RET instruction to return from our machine code routines to BASIC. This is an unconditional instruction. There are similar but conditional return instructions such as

RET Z — return if ZERO flag is set

RET NZ — return if ZERO flag is not set

RET C — return if CARRY flag is set

RET NC — return if CARRY flag is not set

Also, there are other, less commonly used, return instructions.

Let's try an example. If you don't have an assembler, load the decimal loader program from the first article in the series. Make up a DATA statement containing the byte values of Listing 1. Run the loader and key **BAND USE 10000 ENTER**.

In our example, the code prints CHR\$(A) only if we have exceeded 255 in the A register. For single byte numbers, the

ADD instruction always adds a number to the value already in the A register. If the carry exceeds 255 the carry flag is set. It's like adding 9 and 1 on your fingers; you have no reminder that you have gone past 10.

You can ADD to the A register either a number, the value of a register or the contents of memory at the address stored in HL. You can also do this with the SUB, ADC, SBC, INC, DEC and CP instructions. ADC or ADD with Carry will do an addition as described above but will add one if the carry flag is set. Subtract with Carry, SBC, operates similarly. To set this or unset, load and test the code in Listing 1, using PRINT USR 30000 ENTER.

INC B increases the value in the B register by one and conversely DEC C reduces the value in the C register by one. As an example load and run Listing 1 with RAND USR 30000 ENTER.

The CP or Compare instruction is used very often. It is a special form of the SUB instruction which only affects the flags and does not change the contents of the A register. Table 1 shows the machine code equates.

lots of the BASIC state IF (operator) THEN RETURN. You could substitute one of the other arithmetic operators such as ADD or SUB in place of CP if it is needed in your routine.

In some examples, we have been using the unconditional CALL instruction to call a BASIC sub-routine. Conditional CALL instructions also exist, so CALL Z, adds an equivalent to the BASIC statement IF (operator) THEN GOTO/B (last number). You can also have the equivalent of GOTO. The JP instruction will jump directly to the given address.

The JR, JRn instructions will jump a specified number of displacement bytes relative to the next instruction. The word of counting this displacement is the same as described for the DPNZ, DZ instructions covered in Part 2 of this series. If you have an example, it will do the calculations for you. Listing 4 prints the lower of the values in the A and B registers. You could play with this by FOR-INC different numbers into addresses 30005 and 30006 before running the code with RAND USR 30000 ENTER.

Table 1.

CP, THEN Constructions  
For single byte comparisons

BASIC	ASSEMBLER
IF A < B THEN RETURN	LD A, A CP B RET NZ
A = B	LD A, A CP B RET Z
A > B	LD A, A CP B RET NC
A <= B	LD A, A CP B RET NC
A >= B	LD A, A CP B RET C
A > B	LD A, A CP B RET C

In assembler, X may be a number, a register or an indirect address. The A register could also be loaded with a direct address. RET could be substituted by CALL — equivalent to BASIC GOTO/B — or by JP or JR — equivalent to BASIC GOTO

Listing 1  
Example of ADC

30000 LD	B, 0	1	B = 0, C = 0
		0	
30001 LD	A, 200	62	A = 200
		200	
30001 ADD	A, 60	199	A = 200 + 60 = 4, carry flag set
		60	
30007 LD	A, 0	62	A = 0, clear A
		0	
30009 ADC	A, 0	206	Add with carry A = 0 + 0 + carry(1)
		0	
30010 LD	C, A	79	C = A = 4
30011 RET		201	Return

Listing 3  
Example of INC

30000 LD	A, 1	62	Print to screen
		2	
30001 CALL	30010	200	
		1	
		20	
30001 LD	C, 97	14	CHRS 1
		97	
30007 LD	B, 26	6	26 letters of the alphabet
		26	
30009 LD	A, C	170	Let A hold C
30010 RST	16	215	Print A
30011 INC	C	12	C = C + 1
30012 DPNZ	241	86	Next character?
		251	
30014 RET		200	Return

Listing 4  
Example of CP and JUMP

30000 LD	A, 2	62	Print to screen
		2	
30001 CALL	30010	200	
		1	
		20	
30008 LD	A, 56	62	A = 56
		56	
30007 LD	B, 48	6	B = 48
		48	
30009 CP	B	184	A > B?
30010 JP	NC, 30014	240	Yes, jump to 30014
		62	
		107	
30012 LD	A, B	120	No, LET A = B
30014 RST	16	215	Print
30015 RET		201	Return



Listing 1			
30000 LD	A, 2	62	Print to screen
		2	
30001 CALL	30010	200	
		1	
		20	
30005 LD	A, 221	62	A = 221
		221	
30007 LD	B, 100	6	B = 100
		100	
30009 ADD	A, B	128	A = A + B
30010 RET	NC	208	Return if carry flag not set
30011 RET	06	215	Print A
30012 RET		201	Return







# MUSIC AND THE MICRO



**This week Clive Gifford looks at Quicksilver's Drum Kit and Acornsoft's Creative Sound. Read on to find out if they set his feet tapping**

This week's column is concerned with reviews of two products for the BBC Micro, one from Quicksilver and one from Acornsoft.

Quicksilver's Drum Kit has been available for some while but I won't be looking at it as one of the few percussion packages for any home computer. This is strange when you consider that to turn your computer into a programmable drum machine or rhythm generator is a far more practical idea than to get a, as a real time synthesiser. The generic musician can use such a device to provide a backing track for him or her to play their most intricate or extraordinary over. The novice can use a simple system as a form of metronome to help their keep time.

Priced at £24.95, it is a specially packaged by today's standards. The basic booklet that comes with the cassette explains the program's features very clearly and concisely. On loading the program, a demonstration routine starts which is friendly, rather poor.

The system operates in real time continuously playing the rhythm that is set on the screen. Editing a rhythm is incredibly easy, thanks to using the cursor keys to move to the appropriate part of the writing and then pressing the DELETE key to delete a beat on an off.

There are four actual drum sounds. Seven which is quite realistic as in the bass drum, electric white in ten and Snare which is also not far from being sharp that can be on every sub-1000 Cmp. synthesiser. There is an option to alter the sound but of course, for I found it quite difficult to obtain a reasonable alternative sound

and was disappointed that the instructions booklet didn't suggest any alternative when in addition to the first sound, there is an actual feature allowing you to get more emphasis on individual beats. I found this to be quite useful.

Apart from the editing procedure already described, the user can play his rhythm in real-time by pressing the corresponding key and not it entered on the screen and. This device is quite difficult to master but could be very useful.

There must, of course, be a limit to the overall use of the system, but the Drum Kit allows up to 4000 beats for each voice, certainly more than enough for most purposes. Rhythms can also be saved and loaded from tape.

The features were quite impressive but the complete package does not live up to its promise. It is difficult to pinpoint exactly what was wrong. I would single out the voice in the more disappointing factor. At £24.95, the Drum Kit is overpriced. It's not come down to a few, due to its worth buying.

Creative Sound from Acornsoft is a far better package value-for-money wise. The book sells for £9.95, but Acornsoft have wisely packaged this together with a cassette containing the longer programs from the book. The book itself is a quality introduction into the field of music making on the BBC. Taking you from basics, it leads you right through all the features that you need to know.

It has some similarities with Gary Herman's book that I reviewed in the last column, it is not for the total beginner to rather progressing of the principles of music and sound but it

is a check-list of programs.

I loaded the first program from the tape and found myself a little confused by the openers. It demonstrates Fourier analysis, which is fine, but, of course, needs a digital/analog converter board to produce genuine results. The program does nothing more than draw a couple of different graphs and we are told that unless you have a DAC, you will have to sit there and imagine what the waveforms are like!

Forcing a title called by this, I started looking and using a number of the other programs. A number of them were simple and several were doubtful in. Change to a screen look on several screenshots. Every other program on the first side of the tape seemed to be a waveform generator or a sound effect, many of which were rather poor. Imaginative though I am, by my mind doesn't stretch to believing that the features of the BBC's sound chip were controlled by the envelope given in the book equal a real engine taking over.

In contrast, some of the programs are of the highest quality. The highlights of all the programs must be the Music Composer. This program was followed by a number of demonstration tunes of which Adagio was by far the most impressive. It is a shame that can be done with the program just by entering the various parts using the code format provided, then a further feature of the rest of the package on its own. Unfortunately, the other demonstration tunes were not as good. Tuba-tuba-tuba, the authors' variation on the little Oldfield classic, was definitely allowed to terrible point.

In conclusion the package is well worth purchasing if you have an interest in music-making on the BBC Micro and the extra three pounds for the cassette plus whole package costs £12.95. It's worth the time saved in typing in the programs.

# MUSICAL KEYBOARD



Paul Longthorne shows us how to give the C64 a musical keyboard

This program converts the '64 keyboard into a musical keyboard, covering four octaves. Each row of the keyboard covers one octave, as shown in the diagram.

when a boy is borned, into 12 bytes of memory, starting at location 40001. These codes correspond to the legs which will be used to play a soccer. They include the four function keys

[illegible]

Trying to achieve this with a BASIC program results in an unacceptable delay before the note is heard, as machine code is far efficient as BASIC.

Age Group	No (%)	Yes (%)	Don't know (%)
18-24	~65	~25	~10
25-34	~60	~30	~10
35-44	~55	~35	~10
45-54	~50	~40	~10
55-64	~45	~45	~10
65+	~40	~50	~10

The program is stored in the top 4K of RAM, starting at location 2000H.

It first loads the key notes, which appear on November 1997.

for future expansion of the program is to include and bring

The low bytes and high bytes of the frequencies for each note are loaded into memory starting at location 4000. Locations 4000 to 4041 contain the low bytes of the notes, and 4042 to 4083 contain the high bytes.

Next, the machine code segments are loaded into memory.

.....

Finally, the program sets the volume to full, by placing the number 15 in location 24286, and allows the user to define the serial envelope for the notes by entering four numbers in the range 0 to 15, which set the attack, decay, sustain, and release values of the envelope.

The mapping code consists of a key press direction loop, which loads the contents of 100 into the accumulator, and then scans through the memory containing the necessary key codes to see if it is

If present, control exits from the loop to the part of the program which loads the high- and low bytes of the source into the registers of the second chip and reaches the next `do`. It does this by using indirect address addressing to locate the two byte bytes in memory.

On exit from the key press routine, the Y register contains a number unique to that particular key. This number points to the memory location which contains the high and low bytes of the name when used as direct indexed addressing.

Depressing the F1 key allows the user to construct a new square envelope. To exit from the program, press the STOP key and the RETURN key.

[illegible]



## Figure 31. HOME computing network. 9 July 1993.



## F I R M W A R E

*Jon Rev's has been trying out two new products from Watford Electronics — and he loved them!*

Watford Electronics has recently released two ROMs which are aimed at making life easier for the dot matrix printer user.

Over the years I have found that word processing can become just as addictive as space invaders. Once you have got the word processor bug you will probably find that every time of correspondence that leaves your home has to be printed. Unfortunately even the quality of print produced by an Epson printer is not adequate for some of the more difficult letters. This problem can be overcome in two ways, you can pay out over £200 for a cheap wheel letter quality printer or you can purchase the Epson Mass Letter Quality ROM from Watford Electronics.

The MLQ ROM allows any Epson FX or LX printer to do a pretty good impression of its more expensive cousin, the daisy wheel. A word of warning to any user of an Epson compatible printer, check with Watford that the MLQ ROM will work with your particular printer before actually buying the ROM as it doesn't work with all so called "compatibles".

Using the ROM is a two step process. Firstly the ROM must be installed, this is done using the TMLQ command where *m* is the model number of the printer or 48 when using an FX or FX80 or 100 when using an LX80. By following the command with a two digit hexadecimal number the user is able to select which area of RAM the ROM is to use as workspace e.g. \* TMLQ 08 will select ROM which is normally reserved for the function keys. Should no address be specified then the current buffer is used as the default workspace.

Having installed the ROM it can then be accessed, directly via the command \*MLQTYPE, from BASIC using VDU1128, or from Wordware via the embedded command GACT19. New users will need to purchase

a separate printer driver for a further £7.50.

The MLQ allows the use of a selected few of the normal printer facilities, these consist of Enlarged text, Underlined text, and Proportional text.

The quality of the printed text is excellent, even under close scrutiny the individual dots are not visible. The MLQ ROM provides an inexpensive way of obtaining a high quality printer.

The second offering to the printer duo is called Dump Out 3 and is a machine code screen dump utility ROM. Once this is written the user is provided both graphics and text screen dumps in any of the BBC's new screen modes (you even mode right!). These dumps can be performed on over 15 different models of dot matrix printers.

The command which accesses the graphics screen dump is \*GIMAGE, this command can be used with varying degrees of complexity, the simplest form consists of \*GIMAGE *screen type*, where the printer type is specified by a three letter code. In following the command with any or all of the 14 optional parameters then the user is able to produce either two-tone or multi-color dumps, rotate the dump through 90, 180, 270 degrees, rotate or enlarge the dump, plus numerous other options. With other similar ROMs which also allow multiple parameters to be used, the parameters must all be entered in a specific order. If the only option required just happens to be the seventh option then values must also be entered for the first six. Dump Out 3 prefixes each parameter value with a single letter thus allowing individual parameters to be entered irrespective of their position in the command's syntax.

\*GWINDOW displays a factory test on the screen which represents the graphics

window, the sides of the box can be moved in any direction via the cursor keys. Having created a graphics window of the correct size and position, pressing the \*G key displays the coordinates which would be required by the ROM to generate the screen window from any given program, this facility makes light work of an otherwise tedious task. The \*GWINDOW command can also be used in conjunction with the \*GIMAGE command, where used in this way the user can selectively print out specific areas of the screen.

Should the user be only interested in the text printed on a screen the command \*TIMAGE can be used, this rapidly stacks all text to the printer displaying any graphics present as asterisks. \*TWINDOW works in the same way as \*GWINDOW but specifies a text window.

Dump Out 3 comes complete with an excellent manual which fully explains every command and its associated parameters. The ROM provides a rapid means of producing high quality screen dumps from your own programs with the minimum of fuss.

With these two ROMs installed in your machine you have the facilities to give your fingertips to fully utilize that often underused peripheral, the printer. J.R.

**Price:** Mass Letter Quality ROM £25.95  
Dump Out 3 ROM £29.95

**Manufacturer:** Watford Electronics

**Address:** 290 High St, Watford WD1 1AN

BBC





**If you travel to the continent or just like eating in French restaurants then Margaret Webb has some good advice for you and your micro**

### French Language Learning Programs

French — *not* *francesse*? If not maybe this is the time to think about learning the language. Then again if like me you have some knowledge — i.e. school French — but have grown a little rusty — it could be an ideal time for a refresher course. There are several programs available for the Commodore 64 and Spectrum computers which could prove useful to both the serious user or the traveller who only needs enough to help him through reading a menu or to the hotel in a hurry.

When searching for the ideal program you must look at certain criteria. For instance if you have a good grounding but want to test your knowledge you may want to look at one of the programs with a game format. Chalkin's *Diffé* Tower tests vocabulary by asking the user to translate words, a correct answer is rewarded with a stage of Diffé Tower being built. Chalkin's *Ami* a Moe has two different games, one a Space Invaders type game where you shoot down the invading invasions and another where you match a word in the first column with an translation in the second. Both these programs have their uses but

neither really teaches the user anything.

The opposite approach is to teach and test in a very dry way, that is to say, teach a bunch of vocabulary in a verb by putting the words in the context without any fluff — just the basic translation — and then test the user on what has been learnt. Quill's *Travle French* and Komco's *French Memory* use this approach. The former deals only with French verbs and does not explain adequately when the different tenses are not when or where they would be used. The latter deals — on two separate courses — with a wide range of vocabulary and other parts of grammar e.g. verbs, adverbs, conjunctions and prepositions. Neither of these programs need any prior knowledge and so would be of use to either of our original groups. However they could prove to be very boring and in the long run counter productive.

It would seem logical therefore to look for something which is fun, without losing the point of the program, but which still has enough educational content to make it useful without needing the user to sleep. Dr Michael Grossberg seems to have met and mastered this problem with his *Linkword* approach to language learning.

Frank, were studying the Grossberg *Intermediate Link-*

word Language Course. It is aimed at the user with a basic knowledge of French. It is a comprehensive course consisting of thirty three sessions each dealing with a specific or common topic plus a chunk of vocabulary. It is designed so that, after about fifty hours use, you will have gained an extensive vocabulary and all the major grammar points necessary to master the language. All of this is done without falling into the inevitable trap of total boredom.

Dr Grossberg is Senior Lecturer in Psychology at University College Swansea and he has used his expertise to design this course. Every time a new word or concept is to be learnt the reader is asked to consider the word in its natural way. For example whilst learning the French for cat — chat — you are asked to visualize a cat sitting on the knee of the fair Miss de laze, thus giving a vivid picture for both the word and it's pronunciation.

When learning grammar — important as all foreign languages — foreign words are memorized by using the analogy of perfume and masculine by the use of boxes and a foreign ring. Thus it is easy to remember that a French girl is feminine because it is perfume to fragrance the mind and that a French dog is a boxer because it is a boxer's love. Learning grammar was always a weak spot with me but I should like to state that this education system very useful.

When it comes to learning verbs a similar approach is used with equally good results. The package is suitable for the Quill's Spectrum but Audio-graph has a similar package available for the Commodore 64 which does not pre-suppose any prior knowledge. This must be the best method I have come across for language learning, it is fun and informative.

# SWOT SPOT

If when you have learnt the language you want to learn a little more of the country and its people you may care to look at Logman's French 'O' Level edition. In addition to the basic language text there is a detailed section covering the topics, towns, and products of France.

Finally, remember that there are limitations to learning a language by computer. None of the programs I have seen have had an easy-stage in that learning to speak the language is difficult. However this is a useful point which can be rectified by your going abroad and trying out your new skills. **Bonnie Chance**

**Program:** French Master Tapes A & B

**Publisher:** Euron Software, 1 Palmer Close, Haringham, Dunstable, Beds

**Machine:** C64, Spectrum

**Price:** £12.00

**Program:** The Gransheng Lightward Language Course

**Publisher:** Audiotext

**Machine:** C64

**Price:** £12.95

**Program:** The Gransheng Intermediate Lightward Language Course

**Publisher:** French Computing, 1a Young St, Mansfield Rd, Liverpool

**Machine:** 48K Spectrum

**Program:** Jan A. Mot and Tone French

**Publisher:** Salla Software, distributed by John Wiley & Sons, Baffins Lane, Chichester

**Machine:** C64 & Spectrum

Program	Basic knowledge required	Graphics	Sound	Scoring Program	Fun	Home Project	English Results
French Master A	No	Yes	No	Yes	Yes	No	Yes
French Master B	No	Yes	Yes	Yes	Yes	No	Yes
Audiotext Intermediate	No	Yes	Yes	Yes	Yes	No	Yes
French Intermediate	Yes	Yes	Yes	Yes	Yes	No	Yes
Jan A. Mot and Tone	Yes	Yes	No	No	Yes	No	Yes
Jan A. Mot and Tone	Yes	No	Yes	Yes	Yes	No	Yes
Gransheng Intermediate	Yes	Yes	No	No	Yes	Yes	No
Gransheng Intermediate	Yes	Yes	Yes	Yes	Yes	No	No

**Program:** Eiffel Tower

**Publisher:** Chalkboard, 21 Wellesley Rd, Worcester

**Machine:** C64, Spectrum

**Price:** £7.95

**Program:** French

**Publisher:** Logman Software, Logman Group, Fourth Ave, Harlow

**Machine:** C64, Spectrum

**Price:** £7.95

## GOOD BYTE

Software	MS	Price
A BOUT TO GO	MS-DOS	£12.95
ADVENTURE	MS-DOS	£12.95
ADVENTURE 2	MS-DOS	£12.95
ADVENTURE 3	MS-DOS	£12.95
ADVENTURE 4	MS-DOS	£12.95
ADVENTURE 5	MS-DOS	£12.95
ADVENTURE 6	MS-DOS	£12.95
ADVENTURE 7	MS-DOS	£12.95
ADVENTURE 8	MS-DOS	£12.95
ADVENTURE 9	MS-DOS	£12.95
ADVENTURE 10	MS-DOS	£12.95
ADVENTURE 11	MS-DOS	£12.95
ADVENTURE 12	MS-DOS	£12.95
ADVENTURE 13	MS-DOS	£12.95
ADVENTURE 14	MS-DOS	£12.95
ADVENTURE 15	MS-DOS	£12.95
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ADVENTURE 99	MS-DOS	£12.95
ADVENTURE 100	MS-DOS	£12.95



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**1 North Parade, Parsonage Gardens, Manchester M60 1BX. Tel: 061-855 1356**

## PERIPHERAL

## Brian Jones has given Trigsoft's G1 Loader the once over on his C64 and here's his verdict

Talk to anyone who has, after months or years of using the tape drive, got out a disc drive and they will overwhelm you with the joys and advantages of their latest acquisition. Talk to them again a few months later and, while they will endorse over the advantages, they will no doubt have started to feel the limitations of the speed of the 1541 disc drive.

Loading from disc can take as long as the first tape loaders. While BBC and Electron users

mean that you don't have to keep removing and replacing the cartridge before and after using a program with which it doesn't work at all and may even stop it loading properly—his cartridge, which I'm going to type this.

Of course, you have to understand that what you might consider to be loading time for a program isn't necessarily all taken up with transfer of program to computer. Many programs, both tape and disc, load

with a five per cent chance of 1,5,5,5 and 70 blocks was almost halved from the usual 40 seconds down to 34. Some games load different sectors from disc during the game, with Space Train the G1 load worked but not with Jumpman. The advantage you get depends on the sort of programs that you load most often. Anyone using lots of one written programs will save a lot more time than someone using commercial business applications packages.

There is another bonus to the cartridge. It makes the normal load and save commands de-emphasised. So a SHIFTED RUN/STOP loads the last program from disc, as in BASIC 4 LOAD/PROG does



as staff their machines full of programs in less time than it takes to get off and push a can of something cold from the fridge, the poor 1541 owner has time to feed the kettle and brew their coffee.

As with many of the other where Commodore has, perhaps for very good reasons, left its customers wanting to improve the basic package, there is a thriving industry of add-ons and solutions to fill the gap. You can now buy replacement chips, speed-loader programs and cartridges to improve the performance of what must be the slowest disc drive on the market. The trouble is that none of them I've heard of, work with all software. So in something that only a small part of the world have?

Having used the Trigsoft G1 Loader Cartridge I have come to the conclusion that the answer is yes. Trigsoft has done up best to maintain the benefits, and perhaps even improve, to remove any disadvantages. To this end they have fitted an on/off switch so that programs that use HIRAM, you switch it off so even as the program has loaded it also

as one or more parts. Once the first part is loaded it runs then loads in the next part. During that first run a map speed a number of seconds setting up things such as sprites before it commences with the load. So, what Trigsoft claims "approximately four times faster" for load times, that may not show on your stopwatch but even with a one block program I couldn't clock over a three fold increase in speed. That's not a good enough improvement for what so be grateful. The two brothers come with programs that don't use the load routine G204. When that happens the load speed reverts to the old slow 1541 standard. Unfortunately this is the case for quite a lot of commercial software, particularly the latest releases.

Nevertheless, the Speedometer I got—and would as more were it not for its dreadfully slow disc accessing—loaded the first two sections in speed then went back to normal for the third part. The result was to knock just 20 seconds off the normal 60 seconds 30 second loading time. A 154 block game on the other hand was reduced from 92 seconds to 40 seconds,

loads the program called PROG from disc, while SAVE/PROG saves PROG to disc, but at normal speed. Also useful is LOAD/4 which displays the directory without leaving the program in memory.

The cartridge comes with clear instructions including how to fit a lead to one of the contacts on the circuit board. This is so that programs that use the RAM under the Kernel ROM will function properly. Even the most rudimentary games should follow their directions, complete with diagrams.

This isn't the ultimate speed-up package for the 1541 but if you value your time highly and can't stand the length of time the red light glows on the drive, it's well worth considering. Price: £29

**Publisher:** Trigsoft

**Address:** 504-163 Redford St, Greenly

**G84**



In our sixth and final article on BASIC conversion, Peter Green looks at the flow of data to and from your computer

# INS AND OUTS



There are only two ways from a computer's world out to a printer, and saving or loading programs or data on tape or disk. Any other kind of I/O in a BASIC program is probably too machine-specific to be convenient.

## Into Print

Two main systems have firm, specific commands for the BASIC, LPRINT and PRINT, which respectively list the program to the printer and send strings and variables to the printer instead of the screen. The One works this way to save the Spectrum, but it also offers COPY. This sends a copy of the screen display to the printer, but as no other computer has a built-in screen dump facility you can't count it.

The other system, found on the Amstrad, BBC and Commodore 64, uses "channels", "streams" or files (on the 64). What happens to a particular piece of data depends on which channel it was sent to.

On the Amstrad, for example, PRINTING to stream #0 to #7 makes the data appear on screen or text windows 0 to 7 but PRINT #1 sends it to the printer. On LIST #0 or LIST #000-2000, #1 to list all or some of your BASIC program on the printer.

The BBC is even simpler

After using VIEW, everything that goes to the screen also goes to the printer stream (the display keeps coming to be the screen catch up). The printer is turned off using VIEW-YOL, means PRINT CHR\$(0). Associated commands are "TRO plus a number to specify a serial or parallel printer, and "FOL to choose a serial head etc. Output can be sent to the printer only, and not the screen, by using "FOL, but most people don't seem to bother.

The Commodore 64 uses a system of file numbers and device numbers to identify its streams. The full device are complicated, but to simplify, suppose your screen program has this:

```
OPEN 3:PRINT #3,
"PRINTED TEXT"
```

This "opens" a file called 3 on device 4, which is usually the printer. Then printing something to file 3 causes it to appear on the printer, not the screen. This would send file number 1 to disk, using CLOSE#1. Now PRINT#3 gives an error: File numbers are just labels and can range from 1 to 255.

What is used to redirect anything normally sent to the screen to file 3 instead? This is how you get listings, for example.

You may find odd CODE#s in text sent to a Commodore

printer. These are necessary to switch things like upper and lower case. Other BASICs are happy with straight ASCII.

## Chain Stores

Sometimes (or often, as the screen memory of the last) it is necessary to load a program at several locations, each performing and running the next. On the BBC, the CHAIN command is used to do that all normal variables are lost, but up to 48 integer values can be passed from one program to the next in the "variable integer variables" A% (7%).

Another popular technique is to save and load blocks of binary data, usually some character sets or screen displays. The BBC command for a binary LOAD is "LOAD "data"

The Commodore 64 only needs LOAD "program" as a program to load, and auto-runs a second one. All variables are retained, but you might see some straggling about with memory locations 40-50 as C64 saves programs that use this technique ignore it. It's a stop loss program converting the variables of earlier, shorter ones.

The Spectrum uses LOAD "program", which auto-runs from a line number specified by the original SAVE command. Also, variables are saved on to tape along with the program, and these values replace any existing ones after the LOAD.

Binary data is loaded using the form LOAD "datastream" CODE, and there's a special version to simplify the saving and loading of screen display: LOAD "screen" SCREEN.

The One is similar in some ways to the Spectrum, though here you use the command CLOAD "program". The save program will only auto-run if it was originally CHAVED using an AUTO specification. And you need to tell the computer whether it was saved as a fast or slow speed (using CLOAD "program"/5), or it won't load the program. For binary data you even have to tell it the start and end addresses, thus:

```
CLOAD "data",A4000,
B4018
```

(That's for a TEXT or LORES screen display, incidentally)

The Amstrad is much more

intelligence. You use LOAD "name" for everything programs in tabular or ASCII format, protected or unprotected, or binary data, at any speed you like. The computer waits for the speed and data type from the header, and acts accordingly. To save-run a BASIC program you use CHAIN "program" to keep the variables, or RUN "program" to wipe them.

## Variables for posterity

One final use for the cassette recorder is to save things like databases, or flag programs. Here you need to store your records of names and addresses or whatever, so to tape before turning off the computer. Which means, of course, saving BASIC variables and loading them back into tape.

As we've already seen, ordinary variables on the Spectrum can only be saved and loaded together with the rest of the BASIC program. However, there are commands that let you store numeric and string arrays separately. These are:

**SAVE (or LOAD) "filename"  
DATA arrayname()**

The whole contents of the array are now stored on tape.

The BBC, Amstrad and Commodore 64 all use variants on the same basic idea. A file is opened and assigned a number in a shorthand label

Then variations of the PRINT and INPUT statements can be used to place data on, or read it off, the tape. Any BASIC variables can be written out in this way. The Beeb and the 64 also let you read data back in as single bytes, but this facility is not available on the CPC464: the Beeb commands are INPUT # and INPUT \$, while on the 64 it is GET #; in each case the file number goes after the #.

Listing 1 gives equivalent versions of flag for each of the three machines, to save and load different types of variables. Note that the CPC464 must read data to stream #5, which is the variable stream. All three machines can detect the end-of-file: the BBC uses EOF #, the CPC464 uses EOF, and the Commodore has to test if the file system variable ST is set.

The On is the easiest of all to deal with: it doesn't have any commands at all for saving or loading BASIC variables!

## The last word

That's the end of the series. It's arrived at the most basic BASIC, though there are still a lot of quirks for you to find and experiment with. Just remember the golden rule: break up the worst program into manageable chunks, decide what each bit does, and do the same thing in your target BASIC. Good luck!

## Listing 1

File operations in:  
(a) Commodore BASIC,  
(b) BBC BASIC and  
(c) Amstrad's Locomotive BASIC

## Listing 1a

```
100 Commodore writing
110 OPEN 5:1,"EXAMPLE" CLOSE => FILE NUMBER=5
120 NUMBER IS 5, FILE name 100 bytes is "EXAMPLE"
130 PRINT#5,55
140 FOR I=0 TO 5
150 FOR J=0 TO 25
160 PRINT#5,INT(I,J)
170 NEXT J: NEXT I
175 PRINT#5,55:CLOSE:GOTO 175:GOTO 175:GOTO 175:GOTO 175
180 GOTO 5
190
200 and reading
210 OPEN 5:1:5,"EXAMPLE" CLOSE => FILE NUMBER=5
220 INPUT#5,55
230 FOR I=0 TO 5
240 FOR J=0 TO 25
250 INPUT#5,INT(I,J)
260 NEXT J: NEXT I
275 INPUT#5,55:PRINT
280 GOTO 5
```

## Listing 1b

```
100 BBC writing
110 OPENOUT "EXAMPLE" CLOSE => F is the channel
120 number which is assigned by the Beeb, not you
130 PRINT#5,55
140 FOR I=0 TO 5
150 FOR J=0 TO 25
160 PRINT#5,INT(I,J)
170 NEXT J: NEXT I
175 PRINT#5,55:PRINT
180 CLOSE#5
190
200 and reading
210 F=OPENIN "EXAMPLE" CLOSE => Beeb's 5 rather than
220 channel variable you use for the channel no.
230 INPUT#5,55
240 FOR I=0 TO 5
250 FOR J=0 TO 25
260 INPUT#5,INT(I,J)
270 NEXT J: NEXT I
275 INPUT#5,55:PRINT
280 GOTO 5
```

## Listing 1c

```
100 Amstrad CPC464 writing
110 OPENOUT "EXAMPLE" CLOSE => the system channel is
120 always 5 for read/write to cassette
130 PRINT#5,55
140 FOR I=0 TO 5
150 FOR J=0 TO 25
160 PRINT#5,INT(I,J)
170 NEXT J: NEXT I
175 PRINT#5,55:PRINT
180 CLOSE#5
190
200 and reading
210 OPENIN "EXAMPLE" CLOSE => stream 5 again
220 INPUT#5,55
230 FOR I=0 TO 5
240 FOR J=0 TO 25
250 INPUT#5,INT(I,J)
260 NEXT J: NEXT I
270 INPUT#5,55:PRINT
280 GOTO 5
```

EXIT





### Nothing ventured

After buying your magazine for two weeks, I was tempted to feel that you have no adventure helping me detect computer viruses without a helpful newsletter — so I put up some ticks.

Another point, how about a game thing for the C64 like there are for the other two people in the country who have recently bought a C64 and it is not there, especially if that for the 10,000 of us who know how to use the BASIC? Now about a thing or two. I'm sure if you started a Spoken Wordhouse on BASIC you would have a few complaints before. Print the games listings and get rid of or discuss Windows to BASIC. And if you do print a listing, then do Windows or Space Invaders, please.

Steven Ryan, *Warrington, Cheshire*

You've got some that I do like found in some fields with the magazine, James, especially since you are a writer. However, if you continue to do it, you will find that more of your content are unfocused. We use our features as an office or personal and will be pleased to hear any comments you address our audience. It's also fun to find C64 games and have some criticism for the new future. Most people like our programming, even though we know that if you understand BASIC, you can get rid of them. However, we're not sure on making this to look like for this in the new future.

Home Computing Weekly,  
PM1 Golden Square,  
London W1R 3AB

### Last date

I have purchased HNW every week since it started circulation and find it superb value for money. It has many unmissable articles — and in particular I liked the R2A article for the Amstrad.

Home Computing Weekly is usually worth five but I am writing to you with reference to the Galaxy magazine that is HNW's UK. It seems that every time you publish the short you have one several days at the Amstrad column. Doublet Manager is available on the Amstrad as in Knowledge and World News Journal. I hope you can clear the short accordingly ready for next time it appears.

Oliver Froun, *Bedford*

The short I published recently at my review in Time Out and we cannot change it in any way, the publisher of there are no room of comments in your column but we're happy to share it with you and the about this.

### Drives in

Users of the excellent Byte Drive data operating system, for the C64/Amstrad computers, may be interested to note that I have developed a method of converting version 2 software to the version 3 format. Some existing users are asked all regarding their system because they do not wish to lose their original software.

I also think that the old version 2 software either can be converted to version 3, thus avoiding the expense of purchasing a new cable and converting the old. Unfortunately I am unable to prove this theory yet as my existing version cable is a prototype, and therefore not identical to those supplied by ICL and Typal.

Anyone who is interested in the conversion, or is looking to Buy Drive User Groups should contact me on 0845 723491 or send me an e-mail.

Garth Williams, 1  
Dunblane Close, Garswood,  
Ashdon-on-Marketfield,  
Wigan WN4 6EM

### In a jam

I refer to your two recent reviews of games for the Amstrad CPC that are at which was released in Taito and the other in Amstrad. Both of these are among a computer using the same, a lot of conversions of an original game for the Amstrad are at which you gave a five star review last year.

I would be grateful if you would point me to your readers that I had nothing to do with a review with this conversion and I obviously support them a week later. The conversion has many bugs, it poorly programmed and rarely lacks the fun and style of the original. It would have been built for Taito and to better with the conversion and to create an original game for the Amstrad control.

Peter Gilmore, *Chichester Productions*

We would like to point out that Tony's letter contains a number of misstatements and potential provocations. If you create a game and then sell that game to a commercial publisher you need to read the contract very carefully. Although we cannot comment on this specific case if it is not a standard for a programmer to sign away all the rights to a program in exchange for a payment of some kind. In such cases, the program owner and the publisher have to be very clear, and the programmer has no further say in what happens to the game or other. In most cases, the developer's name and copyright are there and are acknowledged by the publisher and the publisher.

We would advise all programmers to have any contracts that they are offered checked over carefully and if there are not happy with the conditions then they should have the contracts amended before signing. We would further advise that you should not act as a promoter for a software contract or all. Your contract or other professional with you should be completed before you sign anything of the nature.

# LETTERS PAGE



Compiled by  
**Gallup**



Fortnight Ending June 25, 1985



"Without a water wheel?" We thought what change was just last time but this one shows an interesting change in the wheel's construction.

It could be that the hybrid seasons are starting and only few well-timed games are being lost a quick run of the top 10 suggests that there are hardly any of the newer releases making the chart at all.

Bovary is still selling, and comes in at number 29 this week, over eight months after its release. Budget software is obviously selling; there are new games from Polyhedron and Microtronic on the bottom 50 of the chart.

Don Duvach, the fellow up to the air flag, is also moving through the maze and has joined the main chart at number 24.

<sup>40</sup> Keep on buying Soft Asl, a quarter of a million, in a good small bar if you could make a half a million pounds it would be a more reasonable price!

[illegible]SPECTRUM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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COMMENTS

**C16/plus4**  
***TIME SLIP***  
Don't buy another  
C16 game until  
you see **TIME SLIP**!!

# Top Ten

1. **South Side**  
Chicago
2. **Top Gun**  
Los Angeles
3. **Blackadder**  
London
4. **Baywatch**  
Los Angeles
5. **Baywatch Nights**  
Los Angeles
6. **Baywatch**  
Los Angeles
7. **Baywatch**  
Los Angeles
8. **Baywatch**  
Los Angeles
9. **Baywatch**  
Los Angeles
10. **Baywatch**  
Los Angeles

# Top Ten

1	Beavis and Butt-Head
2	Scruffy Lawd
3	Alvin & the Chipmunks
4	Crashy Lawd
5	Oliver
6	Quentin Tarantino
7	Auto Race
8	Johnny Carson
9	Marvin the Paranoid Android
10	Scruffy Lawd

**Top Ten**

1. **Earth Aid**  
for men
2. **Reckitt Benckiser**  
J&J Baby
3. **Flamingo**  
Home Life Fund
4. **Marathon**  
Marathon
5. **Wagner Group**  
W&A
6. **International Brotherhood**  
International
7. **Imaging Systems**  
Imaging Systems
8. **Goldman Sachs**  
Goldman Sachs
9. **Wells Fargo**  
Wells Fargo
10. **Wells Fargo Bank**  
Wells Fargo Bank

## INCENTIVE

JUST  
GAMES

## BRIGHT SPARKS

It's a real puzzle of a competition this week courtesy of Incentive Software. There are over thirty prizes for lucky readers!

**T**he week's prize will have you running round in circles chasing your tail. Incentive Software, where logic game Confuzion is now available on Amstrad, Acorn and C64, and BBC/Millennium has located the owner of London looking for a prize suitable for the discerning H/W reader.

Incentive's account overvalued found a couple of wooden puzzleists. Don Green has already got home you recommended for weeks if not months, just like Confuzion then close.

The game focuses an automated production plant for the manufacture and storage of the deadly explosive bombs and your task is to destroy the whole complex by eliminating the explosive stockpile. Following this plan, you disassemble this week's puzzle a complete maze that has you trying to blow up a bomb.

The last prize, for the first out of the two of correct answers, is an intricate wooden jigsaw puzzle based upon the theme of two inter-related snakes. All you have to do is take a spear and put it back together again! The puzzle is a challenge made in two types of hardwood and is worth £46.

There are 30 reasoning prizes that also take a rather theme. This one the game is very similar to the problem in Confuzion. You have to assemble the wooden cubes in such a manner that the water will right around the cube and end up drying themselves. Each puzzle is worth £5 and there are 30 for H/W readers.

#### The puzzle

Confuzion involves the manipulation of a number of blocks that have a few built-in holes. By sliding the blocks around you have to connect the spark to the bomb with the expected consequence.

In our puzzle, logic was weaker. Reader Page puzzle Trevor Treason, you have to find the chosen path from spark to bomb. Trevor explains:

In this unusual feature the number by each length of line is the same as number that length takes to burn.

There are many possible

paths. From spark to bomb and the path the burning line takes is selected by micro-wire in the back.

As you can see

the spark is alive  
the line is just about to be lit  
it is going to take the shortest  
possible route to the bomb!

How many seconds will it take  
before the bomb goes off?

#### How to enter

When you have found your chosen path, mark it on the pattern, add your name and address, cut it out and pop it into an envelope addressed to: Incentive Computer, Home Computing Weekly, No 1

Golden Square, London W1R 3AB

Your entry should arrive by first post on Friday 26 July, 1985.

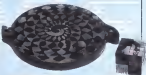
Don't forget to write clearly, otherwise your path takes to burn on the back of the envelope.

#### The rules

• Entries will not be accepted from members of Incentive Software, Home Computing Weekly and Advisory Resources & from their agents or distributors.

• The first correct solution forms part of the rules.

• The value of prizes is fixed and no correspondence can be entered into.

JUST  
GAMES

62 Brewer Street, London W1  
(01) 734-6124 or 437-0761



## Confusion Competition

Entry Coupon

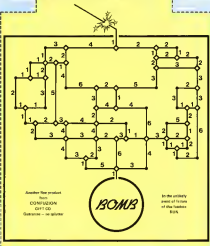
Please return to: **definitely bomb**

Name \_\_\_\_\_

Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

post code \_\_\_\_\_

Considerable help and advice is being being provided by the BOMB team to help you complete this competition. Please do not forget to send in your entry by the deadline of 1st October 1990. Entry will be closed at that time. Entry will be closed at that time. Entry will be closed at that time.



# CONFUSION



1	12	2
4	5	8
5	7	9
10	11	13
15	14	16

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26



## Beware of the Cowboys

**VIDEO YOU**

Cheryl A. Hill, M.D., M.P.H. [hillc@hsph.harvard.edu](mailto:hillc@hsph.harvard.edu)  
 Correspondence: Hill, M.D. Tel: (617) 495-6000

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1



1000

## Keep a low profile

Here is a useful tip for CGE users.

If you have trouble keeping the machine in lower case while typing lower case programs (as of magazine then put the machine in lower case and hold down CTRL while pressing H at the same time. This holds lower case.

To go back to upper case, hold down CTRL while pressing L. Now you can select upper or lower case as normal. I would also like some help in getting the dose in *Castle of Terror*.

Andrew Craig, Billingham

Here are two short routines from *Y-Spinner* for the BBC computer.

That way will give you a laser pen effect on your screen.

10 REMOTE SPINNING P.O.  
200000, 0.0000000000000000  
210 REMOTE SPINNING  
200000-10.0000000000000000  
220 REMOTE SPINNING

This program will present a BASIC program but "control break" will cancel it.

1 REMOTE SPINNING P.O.  
200000, 0.0000000000000000

## Competition Week Two

Here is the second clue in the first part comprising questions and answers by Home Computing Weekly and *"DATABASE"*, the Times Television program.

### Clue 2

#### Part A

"It's embedded space reaches up to the top.

The falling in England, four hundred four high, leads me a nice cup of an important character, Signed at Warrington, the Alton Carts."

#### Part B

Spinning routine takes products, five letters but only one answer.

The 50 winners will each receive one year's free subscription to *Periodic* magazine.

Prizes will be announced on the *"DATABASE"* Television Series in September.

## Max words

These cryptic clues lead to six-letter words which go into our grid clockwise around each hexagon, starting from the cell with the blue number as a

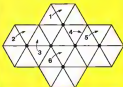
The clues are contained in that each word you are looking is an anagram of an anagram letters in the clue.

For example, if an official visit rather informally the answer would be *CRAYON*, as

anagram of the first six letters

- 1 When change can better do so a tailor's rope
- 2 Knave visited in burning the first
- 3 Pet in restaurant can do
- 4 Secure area for pistols
- 5 House which poor around perambulation
- 6 Follows central to its list

Can you find all six words?



## Solution

to last week's puzzle



## Microsoft and Communities

Microsoft 800 gives a wealth of communications facilities at your fingertips. The service network to over 25,000 people across the nation and the nation's electronic mail, international radio, Microsoft channels, the gallery, tele-shopping, only city channels, compact and expanding.

The students can rely on the 800 for using your phone. You can hold live conversations about from your keyboard or in a desktop that has you can narrow industry perspectives every Wednesday night.

Calgary is the new interactive service that offers over a few new channels (pages) and with Telepresence you can order goods in 10 hours.

Don't forget to order and watch every of 800-800 and be among the first to have the number show.

# READERS PAGE



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(presents)

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AS...



# 007

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# Fun and games Summer 85

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Match your skills against the computer at three skill levels or play against another opponent.

Before the kick off, the crowd give their enthusiastic support by singing "Here We Go".

Penalty shoot outs are one of many star features of this game.

CBM 64 £5.95 (cass) £8.95 (disk)

Available for Amstrad and MSX in early autumn.



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FEE - FIE - FO - FUM

I smell the blood of an Englishman

HA - HA - HA - HA - HA!

Will Jack be warned by the mocking sinister speech of the giant or will he continue his quest to retrieve the family fortune with nothing but his agility of mind and body to help him.

CBM 64 £5.95 (cass) £8.95 (disk)



The stunning speech effects in the above programs were generated by a **VOICE MASTER** speech synthesiser.

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